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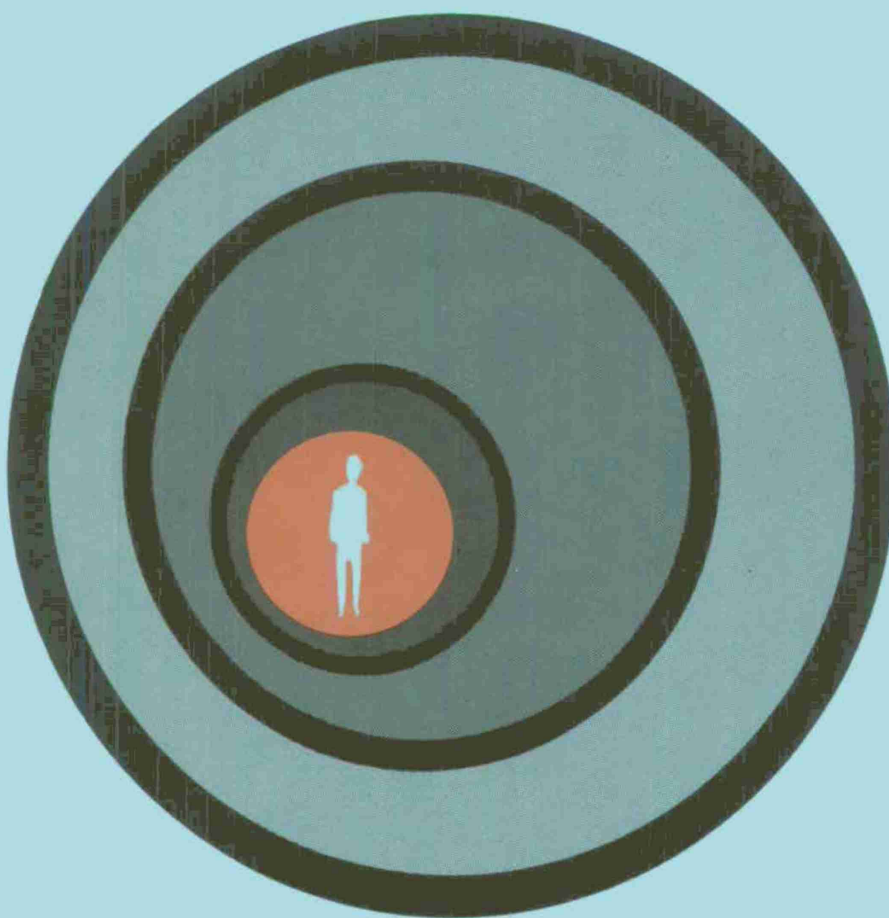
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T A E G REPORT
NO. 40, *Vol. 2*

DESIGN OF TRAINING SYSTEMS

COMPUTERIZATION OF THE EDUCATIONAL TECHNOLOGY
ASSESSMENT MODEL (ETAM) — VOLUME 2



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TRAINING ANALYSIS AND EVALUATION GROUP

ORLANDO, FLORIDA 32813

DESIGN OF TRAINING SYSTEMS
COMPUTERIZATION OF THE EDUCATIONAL TECHNOLOGY ASSESSMENT MODEL (ETAM)
VOLUMES 1 AND 2

ABSTRACT

This two volume final report summarizes the analysis, design and development activities associated with the Educational Technology Assessment Model (ETAM). It contains relevant background information and results of prior studies leading to the finalized ETAM procedures and computerized routines. A comparison of the manual versus the automated approach is included. Data base structures and the ETAM program flow are described and related to each other. The appendix includes the results of a study on the indexing of innovations and the assignment of taxonomic descriptors to courses, job/tasks, and instructional vehicles. The appendix also includes program documentation on the ETAM Range-of-Effect, bibliographic references, and additional information supporting the ETAM design. The detailed ETAM procedures supporting this report are included in TAEG Report No. 12-3, Phase II-A Report. TAEG Report No. 32, The Development of Scaling Procedures, supports the computerized approach taken in scaling variables. Other important background and reference information can also be found in a report written by Drs. R. B. Miller and A. F. Smode titled "Major Innovations in Training Technology."

Phases I, II, II-A, III and IV were accomplished by the IBM Federal Systems Division with the Training Analysis and Evaluation Group, Orlando, Florida, providing technical guidance and support. The overall DOTS objective is to provide Naval Education and Training Command (NAVEDTRACOM) management with additional tools in the form of computerized mathematical models to assist in predicting the quantitative impact of training resource decisions. The planning process will be enhanced by providing decision makers with the capability to economically and rapidly consider a wider range of alternatives.

Phase I was a study and definition effort resulting in a complete functional description of the NAVEDTRACOM; a strategic definition of the social, political, economic and technological environments pertinent to the naval education and training system in the 1980's; a list of existing and potential models amenable to computerization and to improving the decision-making process.

Phase II was devoted to the selection and development of three mathematical models from the Phase I list of candidates. The three were the System Capabilities/Requirements and Resources (SCRR), the Individualized Training Simulation System (ITSS), and the Training Process Flow (TPF) models.

Phase III centered on evaluating the selected models at the Fleet Training Center, Norfolk, VA. An important recommendation from the Test and Evaluation conducted during Phase III was that DOTS should investigate model applications at higher command levels.

Phase IV responded to the recommendations of Phase III by (1) operating and testing at TRAPAC, San Diego, CA, the models developed in Phase II, and (2) developing a new Training Requirements Analysis Model (TRAM) and field testing it at CNTECHTRA, Memphis, Tenn.

The major effort supporting Phase II-B was the ETAM procedural development during Phase II-A. In addition to the procedural development, computer applications were described, scenarios using the ETAM procedures were prepared, and ETAM validity and logical structure were confirmed.

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20. ABSTRACT (Cont'd)

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DESIGN OF TRAINING SYSTEMS

COMPUTERIZATION OF THE EDUCATIONAL
TECHNOLOGY ASSESSMENT MODEL (ETAM)

VOLUME 2

Robert B. Miller

Larry R. Duffy

James D. Staley

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May 1977

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ALFRED F. SMODE, Ph.D., Director
Training Analysis and Evaluation Group

FOREWORD

The Design of Training Systems (DOTS) project objectives are in consonance with the requirements of Advanced Development Objective ZPN07 (formerly ADO 43-03X), Education and Training Development. ZPN07 includes a number of projects concerned with demonstrating and evaluating the technical, operational and financial feasibility of applying advanced technological applications to improving the training process.

The Bureau of Naval Personnel initiated the original ADO in 1966 to make naval training more responsive to the changing times. As one project under this effort, DOTS was designed to improve the process of managing training resources through application of the techniques of system analysis and system simulation as accomplished through mathematical modeling. The end objective is a family of computerized mathematical models enabling training management to more rapidly predict the impact of changes in training resource availability or requirements.

The majority of education and training was reorganized in 1971 under one command, Chief of Naval Education and Training (CNET). Because of this change, DOTS responsibility was transferred to CNET in March of 1972; more specifically, to the Training Analysis and Evaluation Group (TAEG), Orlando, Florida. The new CNET organization greatly increased the potential benefits to be gained from the increased application of new management techniques and, therefore, from the DOTS' R&D effort. DOTS began in February of 1973, with the majority of tasking being contracted to the International Business Machines Corporation, Federal Systems Division, Cape Kennedy Facility, located at Cape Canaveral, Florida.

The Training Analysis and Evaluation Group, Dr. A. Smode, Director, project team members Messrs. M. Middleton and W. Lindahl, complemented the contracted effort by providing direction and guidance and in establishing organizational interfaces.

The model was developed by Mr. L. R. Duffy, Dr. R. B. Miller, and Mr. J. D. Staley. Mr. R. E. Hallman and Mr. L. R. Duffy provided management for the project.

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APPENDIX A

STUDY OF DESCRIPTOR AND INDEXING TECHNIQUES
FOR ETAM RANGE OF EFFECT ANALYSIS

INTRODUCTION

A major topic in the Educational Technology Assessment Model (ETAM) is a body of knowledge and a set of procedures for determining the range of courses, job-tasks, and instructional vehicles in the Navy that can be affected by a proposed innovation. This range establishes the multipliers of benefits, liabilities and costs that are potential in the innovation, and therefore central to decisions about adoption or rejection.

The initial phase of ETAM specified a taxonomic structure within and between major classes of training entities--courses of instruction, job-tasks, instructional vehicles. Elements in the classification system were each identified and clearly defined. Taken all together, the terms in this classification system were intended to structure the essential functions in training technology. The terms, as sets of functional descriptors, were to be used for the practical indexing of entities such as courses, job-tasks and instructional vehicles in the Navy's inventory. The same set of terms (and their defining concepts) would also be used in "describing" the innovation, or rather in "indexing" the innovation.

The descriptor set used in indexing the innovation could then be applied to the data base inventories of Navy training courses (for example) in making a first pass at selecting those courses that were relevant to the innovation--perhaps 50 out of over 4,000 courses, or 200 out of over 4,000 courses.

This study reports the moving of this background effort towards implementation. A procedure is described for indexing an innovation so as to create the content of a search query to be applied by automatic search on a computerized data base. Techniques are described for indexing data base entities such as training courses, job-tasks and instructional vehicles. The same descriptor set is used that is applied to the innovation. Data about each of the entities are contained in Navy listings with, usually, brief descriptions.

Because the application of subject matter descriptors to innovations and to data base entities with the intent of using one to search on the other requires a good deal of human judgment, the strategies for indexing searches and indexing data base entities are discussed. "Indexing" means the selection of a group of descriptors to apply to the data base entity or to the search specification. Also, a rationale for the search procedures specified for ETAM and for the indexing procedure applied to data base entities is offered. Simplicity for the user is a prime consideration.

The final judgment of relevance or irrelevance of an entity to an innovation is not based on automatic matching of descriptors in the search specification and data base entities. Rather, it is a series of operations in which the human

assessor of the value of the innovation examines progressively more contextual information about each candidate entity. The candidate entities are those that survive each next step in winnowing out those that are clearly irrelevant.

Under some specified search conditions, the ETAM level of search is bypassed for direct access to the applicable Navy data base. The identification of entities relevant to the proposed innovation enables specific judgments of magnitude of benefit, liability and cost factors to be taken into account for each entity. There are specific references that can be objectively cited for assessing overall benefits, liabilities and costs. Thus, the validity of the ensuing decision to accept or reject or modify the innovation is given strength; and, if the innovation is adopted, the targets for its application have already been specifically, rather than vaguely, identified.

Recommendations are included that, before widespread adoption, the search and indexing procedures should be tried out and, where necessary, fine-tuned within the defined objectives and theoretical models underlying the present taxonomic structure of ETAM.

PROCEDURES FOR INDEXING THE INNOVATION

It is assumed that the indexer of the innovation or of the data base entities (training courses, instructional vehicles, job-tasks) has training and expertise in the index content and definitions, and has acquired some proficiency in search strategies such as are discussed later in this appendix.

INDEXING THE INNOVATION. The following procedures assume that the indexer is familiar with the definitions of taxonomic terms in the ETAM Phase II-A Final Report, specifically with the procedures described in Task 5 for Determining Range-of-Effect.

The source data which the assessor converts into an indexed description of the innovation may consist of various prose descriptions of the innovation and its intended uses and applications. The assessor may, through his general background in training and training operations in the Navy, amplify or modify this description in his thinking.

The assessor will know that the hits revealed by the indexed search will be only candidates for further examination in determining relevance. The further examination will be made by the assessor looking at the titles of the entities and further contextual descriptions of them.

His indexing policy will tend, therefore, to be generous and lean toward inclusion rather than exclusion of possibilities.

1. Determine Type of Innovation

Follow the procedures described in the ETAM Phase II-A Final Report, Task 5, in determining the type of innovation--primarily applicable to training courses, job-tasks, or to instructional vehicles. This step may be merely a starting point. It is possible that the course of inquiry may lead to all three classes of entities being explored for potential benefits, liabilities, costs and other effects.

2. Determine Use of ETAM Or Other Data Base

If the innovation applies with certainty only to concretely named entities, bypass ETAM search and go directly to the applicable Navy data base such as CANTRAC on courses, Naval Directory of Training Devices or Occupational Standards on job-tasks. Use of the name of the entity, for example radar ASQ-7, as the key for identifying the relevant training courses or job-tasks or instructional equipment. This is the fastest and most efficient search method--using the most specific and uniquely identifying characteristics of the object search in the search query.

Assume, however, that a subject matter search rather than a named entity search is indicated by the characteristics of the innovation. Proceed to Step 3.

3. Describing the Innovation for Search Query

For reasons already stated, the description of the search query may be somewhat broader in scope than would be made by a "tight" characterization of the innovation for purposes other than determining potential range-of-effect.

Select the applicable format type--training courses, job-tasks, or instructional vehicles. (See Figures A-1, A-2 and A-3.) It is advisable to prepare the descriptor selection with a paper format. Put a check mark or circle around a numbered item to indicate selection of a descriptor. If the descriptor is to indicate a NOT characteristic for excluding known non-relevant entities, put a large negative sign in front of the numbered item.

Scan the entire set of descriptors on the format before making selections. The following rules govern the manner in which query descriptors should be formulated.

- o Only an item with a numerical prefix code can be selected. "Categories" of descriptions are underlined (or in capital letters) and merely title a meaningful group or subset of the description.
- o Query descriptors between categories form a logical AND relationship. All must be present in the index descriptor for the entity if selection is to take place. However, if the indexed entity in the ETAM data base does not have an indexed entry under a given category, but the search query does have a selected descriptor under that category, the search operation will ignore that category in selecting or rejecting that entity in the data base. (See examples 1a, 1b and 1c in Figure A-4).
- o Query descriptors within a category form a logical OR relationship. Any one that exists in the search query that is present in the index descriptor for an entity will cause the entity to be selected. (See examples 6a and 6b in Figure A-4.) This assumes, of course, that an AND relationship does not exist due to a query descriptor in another category. (See example 5e in Figure A-4.)

ETAM TRAINING COURSE DESCRIPTORS

Reference knowledge

- (01) System purposes
- (02) Organizational roles
- (03) Contexts of operation
- (04) Organizational rules
- (05) Other

Enabling knowledge

- (10) Operational goal criteria
- (11) Nomenclature, identif., location
- (12) Procedural descriptions
- (13) Job relevant facts, rules
- (14) Other

Task formats

- (20) Procedure formats
- (21) Decision formats
- (22) Construction formats
- (23) Other

Gross job categories

- (30) Operations
- (31) Maintenance
- (32) Service and administration
- (33) Command
- (34) Other

Objective task variables as manifest in the training

Equipment and objects used:

- (40) Real (41) Simulated (42) Symbolic

Environments in which task is trained:

- (43) Real (44) Simulated (45) Symbolic

Tools/instruments used in training:

- (46) Real (47) Simulated (48) Symbolic

Reference/enabling information in doing task:

- (49) Applied (50) Not Applied

Criteria of task performance:

- (51) Real (52) Simulated (53) Symbolic

Task functions dominant in training

- (60) Goal projection
- (61) Scan-detect
- (62) Identify
- (63) Interpret
- (64) Procedure following
- (65) Decide
- (66) Construct, plan
- (67) Track
- (68) Motor performance
- (69) Interpersonal interaction
- (70) Recall task-cycle information
- (71) Recall enabling information
- (72) Adapt improvisationally/impromptu
- (73) Other

Stage of learning

- (80) Orientation, familiarization
- (81) Task nomenclature, identifications, locations, facts, rules
- (82) Task formats at conceptual level
- (83) Procedures at verbal level only
- (84) Task components with guidance
- (85) Entire job-task procedurally at barely acceptable mastery
- (86) Highly proficient in work context
- (87) Unusual task conditions
- (88) Performance at key man level
- (89) Refresher learning

FIGURE A-1. FORMAT OF DESCRIPTORS FOR INDEXING AN INNOVATION OR DATA BASE ENTITIES: TRAINING COURSES

ETAM JOB-TASK DESCRIPTORS

ADMINISTRATIVE

Routine paperwork

- (01) Forms filling
- (02) Document file-management
- (03) Decide-encode
- (04) Screen-filter distribute
- (05) Other

Non-routine paperwork

- (11) Construct messages-reports
- (12) Analyze-interpret-evaluate
- (13) Construct recommendation-proposal
- (14) Construct-plan
- (15) Other

Office equipment operation

- (21) Typewriter
- (22) Telephone, etc.
- (23) Reproducer
- (24) Computer terminal
- (25) Teletype
- (26) Other

INTERPERSONAL

Inform-instruct-manage

- (31) Brief-debrief
- (32) Instruct-train
- (33) Assign-monitor-coordinate
- (34) Evaluate
- (35) Advise-inform-negotiate
- (36) Other

TECHNICAL

Procedures

- (41) Sequential
- (42) Strategic-adaptive
- (43) Interpersonal-team member
- (44) Other

Type of procedure (main emphasis)

- (51) Scan-detect: symbolic (including maps, transduced signals, radar)
- (52) Scan-detect: natural events, things
- (53) Identify: symbolic (including transduced signals)
- (54) Identify: natural events, things

TECHNICAL (Cont'd)

- (55) Interpret: symbolic
- (56) Interpret: natural
- (57) Perceptual-motor
- (58) Cognitive operations
- (59) Manual
- (60) Communicate

With or without equipment

- (61) With equipment or applied to equipment (paper is "equipment")
- (62) Without equipment

Decide

- (71) Diagnose-analyze
- (72) Select-choose
- (73) Under stress or load
- (74) Other

Construct-repair-plan

- (81) Manual construct or repair
- (82) Cognitive construct-plan

Track-aim-steer

- (91) Applicable
- (92) Time stress
- (93) Information-load stress

FIGURE A-2. FORMAT OF DESCRIPTORS FOR INDEXING
AN INNOVATION OR DATA BASE ENTITIES:
JOB-TASKS

INSTRUCTIONAL VEHICLES: DESCRIPTOR LIST

| | | | |
|--|--|---|--|
| <u>Vehicle type</u> | | <u>Type of external control operated by student</u> | |
| (01) | Instructor | (61) | Not applicable directly |
| (02) | Static graphics | (62) | Artificial or symbolic response |
| (03) | Animated graphics | (63) | Representational response by symbolic selection |
| (04) | Audio | (64) | Reperesentational response by dummy control activation |
| (05) | Physical models, demonstration | (65) | Task-manipulative response, non-dynamic in time and force |
| (06) | Procedural trainers: symbolic | (66) | Task-manipulative, dynamic and interactive |
| (07) | Procedural trainers: physical but not functional | | |
| (08) | Procedural trainers: functional | | |
| (09) | Task and system simulators | | |
| (10) | Real equipment, itself | | |
| <u>Class of training objective</u> | | <u>Feedback presentation logic</u> | |
| (11) | Reference knowledge | (71) | Not applicable |
| (12) | Knowledge-task specific/enabling | (72) | Selects next stimulus item or |
| (13) | Task-skill formats | (73) | Gives evaluation of preceding |
| (14) | Skill training | (74) | Selects and presents guidance information |
| <u>Vehicle properties</u> | | <u>Response evaluation logic</u> | |
| (21) | Visual | (81) | Not internal--depends on instructor or student evaluation |
| (22) | Auditory | (82) | Evaluation limited to student's immediate response |
| (23) | Kinesthetic/vestibular | (83) | Evaluation extended to a set of student responses |
| (24) | Tactile | (84) | Tolerance limits on acceptable student responses: FIXED |
| <u>Type of content displayed</u> | | (85) | Tolerance limits on acceptable student responses: VARIABLE |
| (31) | Text-verbal | | |
| (32) | Diagrammatic | | |
| (33) | Abstracted pictorial representation | | |
| (34) | Pictorial representations | | |
| (35) | Physical representations | | |
| (36) | Other | | |
| <u>Type of presentation sequence</u> | | | |
| (41) | Library of frames or items | | |
| (42) | Presentation sequence not applicable | | |
| (43) | Fixed sequential frames or items | | |
| (44) | Random selection of frame sequences | | |
| (45) | Dynamic change of content within frame | | |
| <u>Selection source for sequencing</u> | | | |
| (51) | Internal program | | |
| (52) | Instructor | | |
| (53) | Student choice | | |
| (54) | Student performance | | |
| (55) | Combinations of the above | | |

FIGURE A-3. FORMAT OF DESCRIPTORS FOR INDEXING AN INNOVATION OR DATA BASE ENTITIES: INSTRUCTIONAL VEHICLES

| EXAMPLE NO. | INNOVATION QUERY DESCRIPTOR | SAMPLE ENTITY INDEX DESCRIPTOR* | SELECTED |
|-------------|--------------------------------|------------------------------------|----------|
| 1a | 03 21 | <u>03</u> <u>21</u> 30 | YES |
| b | | <u>03</u> <u>22</u> 30 | NO |
| c | | <u>03</u> <u>30</u> | YES |
| 2a | 03 | <u>03</u> 21 30 | YES |
| b | | <u>21</u> 22 30 | YES** |
| 3a | 21 | <u>03</u> <u>21</u> 30 | YES |
| b | | <u>21</u> <u>22</u> 30 | YES |
| 4a | 03 -21 | <u>03</u> <u>21</u> 30 | NO |
| b | | <u>03</u> <u>22</u> 30 | YES |
| 5a | 03 -21 22 | <u>03</u> <u>21</u> 30 | NO |
| b | | <u>03</u> <u>22</u> 30 | YES |
| c | | <u>03</u> <u>21</u> <u>22</u> 30 | YES |
| d | | <u>03</u> 30 | YES |
| e | | <u>02</u> 21 22 | NO |
| 6a | 21 22 | <u>03</u> <u>21</u> 30 | YES |
| b | | <u>03</u> <u>22</u> 30 | YES |

* Descriptors underlined are primary basis for selection/non-selection.

**No 01-05 index descriptors - therefore entry is selected.

FIGURE A-4. EXAMPLES OF ENTITY SELECTION BASED UPON INNOVATION DESCRIPTORS (TRAINING COURSE DESCRIPTORS)

- o A query descriptor will select any entity which does not have any index descriptor in that category, provided any AND relationship is satisfied. (See example 2b in Figure A-4.)
- o Select one or more descriptors within a category. It is not necessary to select a descriptor in every category--a search query could conceivably consist of only one descriptor in one category. If a descriptor within a category is selected, it should best fit the innovation. If the assessor is uncertain about which descriptors best fit the innovation and the intent of this stage in search, he may select several descriptors within one category and thereby play it safe. Descriptors selected within the category are logically OR'd to each other. This means that (with respect to this category) the entity will be selected as a hit if either one or the other descriptor (or both) match the index descriptors in the data base entity. This OR relationship is automatically created when the assessor selects more than one descriptor within a single category. He may select as many descriptors within a category as he chooses. The OR relationship among index terms serves to expand the range of entities in a data bases that will be selected.
- o The assessor may be aware that if some index descriptor appears in a data base entity, that entity is thereby irrelevant to the search objective. He then enters the number of the descriptor along with a NOT function that is applied to it. This means that if an entity in the data base contains that descriptor in its index, the entity will be rejected no matter how well it matches other search descriptors. Notice that it makes sense to use a NOT descriptor only if no positive descriptors are selected within the same category that contains the NOT descriptor. However, it should be recognized that what may be logically equivalent in the formulation of search arguments may not be psychologically equivalent. In any event, if the assessor inadvertently includes a NOT descriptor in a category which also contains positive valued descriptors, the search logic ignores the NOT item as a redundant and irrelevant specification. (See example 5c in Figure A-4.)
- o The descriptor OTHER: Ordinarily in constructing a search specification this descriptor is ignored. But on some occasions, none of the descriptors in a category fits, but the searcher feels strongly that there ought to be a descriptor in this category for the innovation. He may ask for OTHER and be prepared to scan through the miscellany of entities that the indexers of the data base have labeled with this descriptor because they too could not find the right descriptor for it. It is likely to be a long chance. The descriptor OTHER may be used along with other descriptors in the category in order to be sure that all the possibilities have been examined.

- o The search specification is readied for entry. The assessor may request--or automatically be presented with--a display or printout of the entire search specification. This display is identical in appearance to the format for selecting descriptors, except that only the selected descriptors--under their category names--are presented. Any NOT descriptors are so identified in the display with a preceding minus sign. The specific search operation is also identified (in human readable symbols) with the innovation's project file number and a search entry code identification. These data and the particular search specification will be retained for retrieval. It should also be carried along with any output listings that result from the data base search.

4. The Search Specification Is Entered

The assessor interactively selects a function that enters the specification into data base search.

5. Preliminary Search Output: Count of Hits

Because the search specification may produce a very large list of hits that would be time-consuming to display, the system begins by presenting an overall count of items that match the search specification. The assessor may recognize at once that something is wrong with his search specification. He may then review and revise it, and resubmit it for search.

6. Inspection of a Sample of Hits

The assessor may request display of a sample of the listing. Perhaps the first twenty-five items are displayed to him. The content of listings in the ETAM data base are limited to the title of the entity and the Navy data base code identification of the entity. In the case of a training course, the CIN/CDP codes and title of the course are presented. In job-tasks, the rating, rate, job-task code number and title according to the Navy's Occupational Standards directory is given. In instructional vehicles, the Directory of Naval Training Devices code identification, Federal Stock Number, and name of the device are presented.

7. Revision of Search Specification

The listing of the previous search results to the assessor may be sufficient for him to revise his search specification. This is likely to make it more constraining. He may resubmit the search.

8. Rejection of Unwanted Entities

In many cases, the brief listing of an entity may provide sufficient context information to enable the assessor to reject the entity from further consideration. An interactive program will be provided to assist the user in the editing of the results of a search. This manual editing will allow deletion or addition of entities as required.

9. Saving the Results of a Search

When the user has made his selection of wanted entities in the results of a search, the results will be automatically saved as a component of the project data base. The results are subject to further perusal or editing as required.

10. Combining the Results of Successive Searches

For the purpose of procedural simplicity, the user is not given the opportunity to formulate complex Boolean search arguments. A complicated pattern of AND and OR relationships requires the formulation of a number of individually simpler search specifications. The user may use the interactive search results editing program to combine search outcomes as required.

11. Getting Further Context from Navy Data Bases

Ordinarily the information gleaned from entity titles is not likely to be sufficient for final decisions of relevance to the innovation. (Ordinarily it requires less information to make the decision of "irrelevance" than the decision of "relevance." The decision alternatives here are "relevant," "irrelevant," and "undecided.") The coding format in ETAM of Navy data base entities may be equivalent to that in the respective Navy data base. If so, a machine readable output from ETAM may serve as direct input to the Navy data base. If not, some manual translations may be required for accessing the computer files. The paper equivalent of the same files may be accessed by the code designators. The latter makes for more nuisance and time in paper shuffling, but is not impossible.

In the final stages of decision about relevance, the assessor will be scanning candidate course descriptions at the level of CANTRAC summaries or more detailed course outlines and schedules, NOTAP (Naval Occupational Task Analysis Program) job-task descriptions lying behind the job-task titles in the Occupational Standards directory, or the descriptions in the Naval Training Devices listings. In the case of instructional vehicles, the TECEP* directory can give still greater assistance in focusing on equipment and media types of relevance to the inquiry.

The fact that the listing of relevant entities will be coded consistent to Navy data base codes for the same entities will enable access to cost, usage and other data essential for the processing of costs and benefits in later ETAM tasks.

*Braby, Richard Ed. D.; Henry, James M.; Parrish, William F.; and Swope, William M. Ph.D; 1975. A Technique for Choosing Cost-Effective Delivery Systems, TAEG Report No. 16, Training Analysis and Evaluation Group, Orlando, FL.

12. Entering Results Into the Project Data Base

Search results, edited as required, are saved as a specific file of the project data base for that innovation. The source search arguments that were used as a basis of the search are also preserved as separate files of the same project data base. The contents of either the search arguments or the search results could be applied to other innovations that are equivalent or overlapping in objectives.

COMMENT. This description has not included a variety of user convenience functions at the terminal. These deal with such factors as user ID, file ID, correction of unintended entries, tutorial services dealing both with the procedure itself and with reference to the meanings of each of the descriptors in the descriptor sets. These are important considerations, but outside the present scope of effort to implement.

PROCEDURES FOR INDEXING INSTRUCTIONAL VEHICLES, TRAINING COURSES AND JOB-TASKS

Indexing the subject matter in a data base is a discipline. It requires a working conceptual knowledge of the taxonomic nomenclature, but no nomenclature of subject matter is free of substantial ambiguity. The ETAM indexing nomenclature is no exception.

In ETAM, the objects to be indexed have two orders of ambiguity. Although the intent of ETAM is to index, say, a given instructional vehicle, the indexer must use as his reference not his direct knowledge about that vehicle, but a summary description of the vehicle. The same applies to training courses and to job-tasks. The indexer must be able to interpret the often cryptic and always incomplete descriptions of the objects being referenced. His task, thus, is more difficult than the librarian kind of indexer of documents who can work with the document content at its face value. Assigning a descriptor to an object is therefore an act of interpretive judgment. The judgment centers on the tradeoff between what is likely to be gained for retrieval objectives by adding, or by not adding, a given index term to the title or name of the object.

The ultimate validity of an indexed data base can be tested not by truth but by practicality. Assume the following conditions: A sample of users--in this case, of ETAM assessors--is given unrestricted time in which to search exhaustively through all of the data base content of course titles, course descriptions and other references. The objective of the searches is to match, say, training courses relevant to the knowledge of the specific training innovation. This process results, presumably, in a number of hits on "relevant" objects. Now let equivalent searchers use the subject matter index and the indexed data base for equivalent searches. To the extent that results in hits from the second procedure match those obtained by the first procedure, the index and indexing operations (taken together as they must be) are valid or effective.

A comparison of the time effort and other costs associated with each of the two procedures would be measures of relative efficiency. In the practical world of cost-to-benefit ratios, even substantial reductions from a measure of Utopian validity can be offset by large cost reductions. In the design of search procedures, there tends to be a tradeoff between the average effort spent in putting the needle into the haystack and the average effort that will be spent in finding it, or the cost of not finding it at all.

This argument is intended to motivate the would-be indexer who correctly realizes that the notion of "perfect indexing" is meaningless. In technical jargon, subject matter indexing is in the class of operations that are "heuristic."

INDEXING OBJECTIVES

Policy 1. The primary objective of indexing the data base is to help the ETAM analyst determine the range-of-effect of a proposed innovation or change to existing (or projected) Navy practices or facilities for training.

The indexer should strive continuously to bear in mind his goal object--to give the ETAM user a practical tool for determining the range-of-effect of a proposed innovation in training technology (whatever its nature). The indexer is creating a job aid. The indexed content is not an end in itself.

A different user and different purposes would certainly generate a different indexing content and structure, and different indexing policies.

Policy 2. In assigning descriptors, err on the side of including the irrelevant rather than excluding the relevant.

This policy is based on the importance of getting the fullest reasonable range of applicability of the innovation or change on which the data base query is based. Rejects at this search level will not again be candidates for inquiry. The indexer must also remember that his index will generate only a preliminary pass at selecting candidates, and that final decisions to accept or reject objects yielded by the automatic search will be made by the ETAM assessor while examining the full context of course titles, course descriptions and so on.

Obviously this advice must be followed temperately. It applies where the indexer has reason to be ambivalent about including or excluding a given descriptor while indexing an object. He will have to take into account the entire context of the description of the object plus his interpretation of what lies behind the description presented to him. The significance of the descriptor to that context should also weight his decision to accept or reject. If the descriptor, or an approximation of the descriptor, seems to have a central importance to the context (of the course, of the vehicle, of the job-task or job) then he should weight in favor of inclusion and let the assessor later decide on relevance. But if the descriptor seems to apply to a relatively unimportant factor in that particular training, or job or vehicle, there is little practical loss if when he is uncertain he rejects using the descriptor. By so doing, he increases search efficiency for the ultimate user.

Indexing Procedure. The following steps include the preparation by the indexer for indexing the ETAM data base content. It is assumed that the indexer will become a skilled specialist in performing this function as contrasted with a host of persons performing this function only occasionally.

1. Acquire a clear picture of the task objectives of the users of the indexed materials.

A continuing awareness of the purpose to be served by the indexed content should help the indexer to do what is sufficient and necessary for the ETAM user. The indexer's strategies

and decisions can remain clearer and more relevant if purpose is restricted to specific needs. The indexing of content for retrieval is a reciprocal operation to querying and searching. Ideally, the indexer acquires some experience in simulated search problems and thus becomes sensitized to the searcher's difficulties.

2. Learn the nomenclature and concepts of the indexes.

The meaning of each index term is given in the ETAM reference material. In many cases, these meanings are somewhat specific to the ETAM context. For example, the term "decision format" cannot be sensibly used without the specific ETAM definition. The user who queries the data base will use the same reference material for selecting index terms in his queries. It is therefore essential that the person who indexes the data base objects, and the person who indexes queries to that data base, share in a single reference that defines the index terminology. Notice that most index terms are clustered into categories or groups. These groupings have a contextual purpose for both the indexer and the searcher. After a number of hours that combine study and application practice, the indexer will begin to find that the appropriate index terms will often emerge almost automatically when he looks at the reference content that describes the object to be indexed. This automaticity has value in efficient classification; it has a liability in that the indexer may become stereotyped in assigning descriptors when he should be exercising contextual judgment.

3. Learn the search rules and strategies that will be applied to the indexed materials.

The indexing of the data base content is a critical step in determining a range-of-effect. But it is only the first in a series of steps taken by the assessor in seeking to match the description of an innovation with entities identified in the data base and ultimately with real entities--jobs, courses and instructional vehicles. The indexed search operations could result in a collection of "probable" relevant items and the rejection of "improbably" relevant items. The final decision of relevance occurs when the assessor examines the contextual descriptions of the items that have been screened as probably relevant.

The indexer should be intimately familiar with these operations and strategies, and the kinds of judgment the assessor will have to make as he proceeds. The indexer can stipulate that the assessor uses the same definitions and meanings of index terms that he uses and which are contained in the shared glossary reference.

By being aware of the judgmental operations of the assessor and query-maker, the indexer can realistically control criteria for precision in indexing. This awareness can be crucial to the indexer's speed and comfort in assigning descriptor nomenclature to object descriptions. He should, of course, have a realistic knowledge of what happens when a data base search is screened by descriptors in various logical relations--AND, OR and NOT, according to ETAM query construction rules. (See preceding material in this appendix for those rules.)

4. Practice assigning descriptors to several scores of entities in each entity class.

The results of this practice are thrown away. The intent is two-fold. One is to master the classificatory format so that the indexer can think with it more or less spontaneously. After a first pass at indexing several dozen entity descriptions (at whatever the level of description is to be used), perform a second and independent pass on the same sample of materials in a day or two--after some degree of forgetting of the first pass. Then compare the results of the first and second passes for reliability. There will be variations, and this would be expected even among highly skilled indexers. But the novice indexer should attempt to think through and account for the differences between his first and his second indexing of the same item. It is not necessary to think of one or the other as being "wrong" when two or more passes on the same material do not match precisely. This thinking through of the variations can lead to a relatively consistent decision policy in assigning descriptors.

5. Index on the basis of entity context as well as specific elements of description.

Assume one is indexing a course title and description. Before assigning any descriptor terms, one should read all of the information that is going to be used (or is available) for the indexing of the course as an entity. One should get the entire context in mind. This enables judgment in selecting index terms that will be useful in a practical way. For example, an operator's course on radar equipment mentions that "routine maintenance operations and diagnosis" is an item of study. The entire course is limited to 10 days. It is a pretty safe bet that the "maintenance diagnostics" will be limited to a few external, procedural tests in order to determine whether the set is operationally usable or not. Almost certainly there will not be circuit and module levels of troubleshooting taught and learned, nor complex inferential strategies applied by the operator. Therefore, the expressions "maintenance" and "diagnosis" in this context would probably not warrant applying to this course, or course segment, nor the descriptors "maintenance" and "decide" (the latter including the meaning of "diagnose") for that course, at least on the basis described here.

The indexer will, of necessity, have to make a number of inferences of this kind. Sometimes his guesses will be wrong. But if he has a general background knowledge of the subject matter (training courses in this example) and uses the contextual information presented to him, his batting average must be better than if he relies only on words and phrases taken out of context.

The descriptor "Other" appears in some categories. This is an escape hatch and should be used with reluctance. On occasion, however, a category may connote concepts that are important for identifying something important about the entity to be indexed, but none of the descriptors in the category make even an approximate fit.

Use the term "Other" in the expectation that a searcher will sometime have a reciprocal difficulty in finding the right descriptor--or several descriptors--and specify "Other." The "Other" file will be a miscellany of items that the searcher will have to look through in terms of their contexts in the hope of finding a hit.

If several indexers agree that the "Other" term is being used too frequently in a given category, the definitions of the other descriptors should be restudied. If this is still unsatisfactory, the definitions of the descriptors may have to be somewhat modified. If this is still unsatisfactory, another descriptor may have to be added to the category.

But changes to the present index, especially after any widespread adoption, should be made with great reluctance. That is because changes will invalidate to some degree the existing indexes of data base entities. A test of motivation to change is willingness to reindex existing entries. This is less a threat if an index term is added to the present list. But as index terms are added, the human difficulties in using the index, either for search or for entities, escalate.

6. Use descriptors to identify key factors in the entity.

Apply a descriptor to an entity (course, job or vehicle) only if the descriptor identifies something important in a practical sense. Some examples will clarify.

Although there can be exceptions to the following principle, it is generally a good one to follow--a factor, feature or element which is less than 5% of the cost, or time or function of the total entity does not justify identification by a descriptor. Thus, a fifteen minute discussion on "system purposes" in a two-week course for operator or maintenance personnel would not justify that the index to these courses include the descriptor "system purposes." But, if a half day or a full day in the two-week course were spent on this topic, it would justify the inclusion of the descriptor.

The 5% principle does not apply if the reference is highly important. The solo pilot may spend less than 5% of total mission time on navigation, but it is a key function to mission effectiveness. This would therefore be an appropriate activity to account for in a job-task characterization--in our indexing system, navigation would be indexed as "interpret" and "cognitive operations."

The data for making these quantitative and qualitative judgments rarely appear in the entity descriptions upon which the indexer generally depends. In consequence, the indexer should have general knowledge and practical acquaintance with the subject matter he is indexing.

Assume that the indexer has general knowledge background of the subject matter being referenced by the description from which he is making the index; assume also that the indexer has thorough familiarity with the meanings of all of the descriptor terms; finally assume that he has had a few dozen hours of experience in applying the descriptor set to these entity descriptions. It should take him between two and five minutes, with a median value of less than three minutes, to index whatever entity is being indexed--the job-task, the course of instruction, or the instructional vehicle. Some entities--such as homogeneous units of instruction--could be indexed far more rapidly--less than a minute. Entities in each of these kinds of materials tend to group themselves so that the indexer learns to recognize what pattern of descriptors applies to members of the subsets. Additional time is required when a standard pattern is not the case.

If the indexer labors for many minutes on a large proportion of individual entities or items, agonizing over the choice of a descriptor, something is wrong. He has not been properly oriented to the task--he may be unduly compulsive about resolving ambiguities, or his information background for the task may be inadequate. On the other hand, if the indexing always proceeds as rapidly as his hand can check off descriptors, he may not be giving enough critical examination and thought to the subject matter. Properly done, indexing is hard mental work. It requires holding a context of information in mind and exercising degrees of judgment not only in what descriptors to select, but also which ones to exclude.

7. Use a standardized format for indexing.

One indexer of samples of job-tasks, courses and instructional vehicles used copies of the format shown in Figures A-1, A-2 and A-3. A special heading was added that specified Navy data base identification code, title of the entity and, as a special factor in course descriptions, course length in days. These data were written by hand and, in many cases, the careful writing (lettering for legibility) often took more time than the indexing of the entity.

A circle drawn around the code number of the descriptor meant the selection of that descriptor. One sheet of paper was used for each entity. It was easy to erase in making corrections or changing a choice. A separate manual step was required for entering these data into the computer.

This indexer felt more comfortable with the entire layout of the descriptor set before him than he would if he had to select or reject descriptors, one at a time, by the prompting method. In fact, this is probably an undesirable procedure. Unless a graphic display can present the entire descriptor pattern all at one time, as well as obviate the need to copy entity titles and codes by hand, the paper format may continue to be preferred.

SEARCH RATIONALES AND STRATEGIES

Consider a data base conceptually like the two parts of a telephone book. On the white pages there appear unique identifiers associated with a given telephone-- subscriber name, subscriber address, subscriber telephone number. Assume, like social security numbers, that there are no duplicate subscriber names. Given the subscriber's name, his telephone number can be unequivocally identified. There is no ambiguity in reference. If the directory is up-to-date the telephone number linked to the subscriber's uniquely identifying name or code is evoked without uncertainty.

Think now of using the yellow pages. Assume you wish to find the telephone number of someone who sells mousetraps. There is no subject matter entry called "mousetraps....sellers of--." You must now make inductive and deductive inferences about the class of sellers who sell mousetraps. Perhaps you think of "rodent control" or "department store" or "hardware store." You are making inferences that this class term includes a seller of mousetraps. You may be right in any of these cases, or wrong in some or all of them. Subject matter descriptors are ambiguous even when carefully defined, unless they specifically point out exhaustively all the members of the set in the class name. This latter is an example of a "closed set." Most class names identify open sets. In ETAM indexing we will be talking mainly about class names that apply to open sets of references.

SUBJECT MATTER SEARCH IS HEURISTIC. Subject matter names, as contrasted with unique entity names, are to some degree ambiguous. The assignment of a subject matter term to an entity in a data base requires some judgment, and the selection of a subject matter term for a search query also requires some judgment. Matching a subject matter intent with a subject matter description therefore is not the result of rigorous processes; consequently, success is only probabilistic and may be increased by the use of a different kind of probe. Success probability also increases to the extent that the indexer of the subject matter shares his definition of subject matter terms with the searcher who selects terms for the query.

There may be cases where the searcher's concept of what he is searching for may be appropriately modified either by inspection of the list of permissible index terms (in a closed indexing system) or by examining the content of an early query and consequently changing the terms he has used in previous queries.

That a success is probabilistic in some degree, and may be based on iterative, converging operations, justifies treating subject matter searching as a heuristic rather than as a rigorous operation. This fact should make a difference in how the search procedure, and its information support, is designed.

SUBJECT MATTER SEARCH IS STRATEGIC. This means that some policies in procedure will be more efficient or more effective, or both, than other policies. Strategies are formulated on the basis of tradeoff variables which may be optimized formally (as by equations) or informally (as by human judgment).

The purpose of search is to find in some universe of entities (such as all Navy jobtask in a data base of job-tasks) only those entries that fit the search objective and all of those entries that fit the search objective. The search objective is not necessarily the equivalent of a search specification. The search objective is what the searcher wants or needs to find in the context of a specific innovation; the search specification is his translation of this need or requirement into descriptors and logical connectors among search descriptors that come from the index lists.

We must assume that the searcher can recognize an entity appropriate to his objective if he can inspect all of the information context that is associated with that entity such as, in this case, a full description of the task--its setting, tools and equipment and objects worked on or with, the work functions performed, environment performed in, and explanatory text.

Assume that the data base has 30,000 job-task titles (entities) and associated with each job-task title is a set of descriptors, an abstract, and a full textual description of the job-task entity. An inefficient, but highly effective way of searching, would be reading each and all of the full text descriptions for all 30,000 job-tasks. The next more efficient method, but less certain of complete effectiveness, would consist of reading all abstracts and, only if the abstract sounded promising, to read the full text description about the entity. This procedure entails some risk of missing desired entities as well as selecting entities that turn out to be irrelevant, because the abstract is an incomplete context and susceptible to misrepresentation.

The next more efficient method, but correspondingly more risky, is to make the first winnowing on the basis of index terms assigned to entities--descriptors. (It is possible that an intermediate method would consist of examining merely the titles of the 30,000 entities by a human interpreter of the probable meaning of each task title.)

We can see that there is a tradeoff between the degree of search efficiency--the labor spent in the search--and the degree of search effectiveness (getting all of the relevant entities in the universe of entities). This tradeoff extends to the size of the index list and the complexity of descriptor relationships that are assigned to entities in the data base.

There is another kind of tradeoff--this is between the precision and extent of effort in indexing the entities, and the relative simplicity and effectiveness of search. The greater the expertise and effort spent in indexing the data base content, the less the effort (other things equal) in search, assuming equivalent criteria for search effectiveness.

In the search process there is a tradeoff between making a search mesh so broad that there will be many false drops (items that turn out to be irrelevant) but does capture a large proportion of all relevant entities, as contrasted with a search mesh that is too fine and, although producing few false drops, has also filtered out a substantial proportion of relative items.

It should be evident that the design of an indexing and search technique is a bundle of compromises that hopefully are based on enlightened practicality.

In principle, search strategy produces a progressive winnowing out of the irrelevant. It is a convergence towards the desired subset through a process of exclusion. It is much like the skilled playing of the game called Twenty Questions where you find what you want by progressively excluding, logically, what you do not want. Unfortunately, this assertion cannot be taken too literally else we are back at reading every document in the library.

SUBJECT MATTER DESCRIPTORS. The following considerations were deliberately taken into account in developing the descriptor list. The descriptor list must serve both the indexer of the content of the data base and the searcher who will query the data base.

Closed Set of Descriptors for a Topic Domain. Recall that topic domain consist of courses and course characteristics--instructional vehicles and their characteristics, and job-tasks and their characteristics. Each domain has about 50 descriptors. A closed and relatively small set simplifies the computer operations of setting up records and fields and search algorithms that are both simple and efficient. All terms can be (and are) carefully defined for both indexer and searcher, thus their usage is relatively standardized. The potential loss of specificity and flexibility in entity description are offset by the ease with which the meanings of the descriptors in this limited set can be learned and their meanings understood and remembered, and their application standardized. Application of the present set of descriptors may show empirically the desirability of discarding, modifying or supplementing members in the list. These changes can be made while still retaining a closed set. By definition, a closed set is under control. We should remember that the topical subject matter level of search is not generally intended to be sufficient in itself to identify or reject target hits as relevant to the search objective.

Few Descriptors per Category. With some exceptions, a category of description contains fewer than eight descriptors. Several sets go to ten or a dozen. A set of this small size is readily learned and its members discriminated from each other. Because more than one descriptor in a category may be used in indexing a reference entity or in creating a query, there is little need to avoid redundancy or seek mutual exclusivity in the descriptor set. By avoiding such a requirement, indexing and querying are simplified perhaps by an order of magnitude. This simplification offsets the loss of precision for a given search

iteration. Topical exhaustiveness for a collection of subject matter descriptors is perhaps more important than precision in this iteration of search. But even the exhaustiveness criterion is a hope that, in most searches, the category "Other" will get few hits. If not (and the searcher has AND'd the descriptor "Other" with a number of additional descriptors, thus limiting the target area), the searcher may have to use a different strategy.

If the descriptor "Other" in a set of descriptors is used too frequently, a revision of the descriptor list is indicated. A benchmark for "frequent" might be 10% of queries in which "Other" is the only descriptor selected in a category of descriptors.

Few Descriptors in an Entire Topical Domain. Fifty descriptors, subset into at least a half-dozen topical groups, are fairly readily learned, especially if they make sense as individual descriptors and in the way they are organized. The entire fifty fit rather readily on a single printed page or display, and can be shown all at once to the indexer or the searcher. Thus, the data entry format for composing a query may begin as a printed page with blanks, or as a display on a graphic terminal.

Avoidance of Descriptor Hierarchies. When they are used to compose a query, the descriptors are all at one logical level. It is well known that attempts to make and use formal hierarchical relationships among functional or topical concepts create procedural difficulties for the user, and put some serious constraints on computer search for at least some kinds of search content. In any event, the small number of descriptors per search domain makes hierarchic structure unnecessary either for the human (except as noted) and for the computer system. All of the descriptors can be treated as a single level list.

TAXONOMIC REFERENCE OF DESCRIPTORS. The source of the present sets of descriptors was not merely convenience for indexing. The source is an applied theory of learning--the essential processes, products and supports for the learning of useful tasks. Each term in each set has a somewhat different meaning for a learning process or outcome than other terms in the set. Each term also derives some of its meaning from its contextual association with the other terms in the clusters and sets. The indexer's task will be somewhat simplified if he recognizes the structure inherent in each set, rather than treating them as an arbitrary list created merely for indexing convenience. Their primary purpose, individually and collectively, is to apply standard names for concepts that generalize an instance of a set of properties, such as found in the innovation, to a some universe of entities that share those properties in a practical as well as theoretical sense.

For a more complete exposition of these ideas, see Task 5, Section III in the ETAM Phase II-A Final Report, as well as Appendix A to that report.

Any standardized terminology is bound to have examples with which it cannot readily cope. If the exceptions are rare--perhaps less than 5%--the standards are likely to be useful. The penalty is some proportion of extra human judgment for coping with these exceptions and perhaps putting them into a "miscellaneous"

file. If, however, the exceptions approach the frequency of items that readily fit the standards, something is wrong with the standards or with the way in which they are applied.

These comments are intended to apply to some who may feel compulsively driven to find a pre-established niche for 100% of the cases in some real world universe. There will be temptations to add terms to the descriptor set in order to fit perhaps small subsets of entities. The value of a closed set of descriptors can be lost if the set increases in size beyond those that can be kept readily in mind after a few hours of practice.

If changes or additions are contemplated--and indeed they should be from time-to-time--they should be reviewed in terms of benefits and liabilities to the entire logic of the classification structure. It is easy to anticipate many sources of pressure to make changes. Very possibly the entire taxonomic logic underlying the descriptor set justifies technical challenge. It would be far better from economic and other reasons to make sufficient tryouts so that the entire descriptor set could be strongly stabilized at the outset before general adoption in practice.

SEARCH ALTERNATIVES. The searcher will be advised to examine his search objectives and the information about the innovation he has as starting point, and choose his search method accordingly. He should be able to bypass any operations that interfere with his progress by demanding that he go to a higher level of description than he already has available for bounding his search region. (Search strategy will be discussed in a later topic.) In any event, the searcher should not be required to enter any level of inquiry that obfuscates his available definition of his search problem. Furthermore, search procedures should not demand his going through any process that does not make a contribution either in range or scope of potential relevance, or in narrowing the search universe towards his objective. He should be able to bypass non-contributory steps in search procedure. The ETAM search procedures enable this flexibility.

Thus, the searcher who wants to get the broadest topical definition of his inquiry should be guided by the ETAM search descriptors in doing so. The ETAM search will yield a broad set of candidate job-tasks, course titles, instructional devices. This first set of candidates, if reasonable in number, may be examined individually at the level of job-task names, or course titles, or titles of instructional vehicles. On the other hand, the searcher may wish to--and be able to--use descriptors in the respective Navy data bases for further subsetting the first list of candidates into a second derived list of still more probably relevant candidates. He may therefore use descriptor names appropriate to automatic search in those data bases, e.g., the Navy's Occupational Standards data base, NOTAP, CANTRAC, etc., permit, in varying degrees, this kind of search.

The searcher may elect to go directly to the Navy data bases for inquiry based on open descriptor sets applied to these respective data bases. Entity titles and terms within titles can be used to construct search arguments. Thus, many task titles in NOTAP include the name of the equipment, tool or instrument on which or with which the task is performed. After the searcher makes a culling pass through the titles of entities, printed out or displayed as a consequence of the query, the searcher may make another pass through the remaining candidates with the supplemental context for each entity presented to him. This would be

the final search pass for accepting or rejecting candidates that had survived the progression of excluding filters imposed by successive search queries.

If the automatic search system is interactive and on-line, a number of successive search passes can be made in perhaps a few minutes, so that the process is neither as complicated nor as lengthy as the description of it.

It should be clear that the searcher is not forced to take any one search route from start to finish. It should be noted that this kind of user flexibility is somewhat unusual in query systems.

SEARCH PROCEDURES. The major factors that make formulating a query easy or difficult are selecting descriptors, selecting logical connectives between descriptors, and composing the content of the query for entry into the computer. The descriptor issue has already been discussed. Because the total descriptor lists are so relatively small for each domain there is no justification for introducing the complexities of hierarchic structure. What is called the "coordinate descriptor" method is being used for creating a query. The user merely enters those descriptors that have relevance to the identification or positive rejection of candidate entities in the data base. If a descriptor is not selected, it is a "don't care" variable in the computer's search logic. Descriptors are organized into meaningful clusters called "categories." The cluster title communicates the context meaning to the user, thus simplifying his interpretation of the meaning of the descriptors within the cluster. In itself, the category title is merely a part of the format display; it does not enter into the search argument unless it is also a numbered descriptor, because there are no descriptors logically subordinate to it in the descriptor set.

The query format itself allows the procedural equivalent of a check list operation in selecting descriptors. This format is desirable whether the user is a novice or expert to the system. Because it is a standardized presentation to the searcher, the descriptor content can rather quickly be learned by the user in repeated usage.

Research (some of it conducted in IBM) has shown that, at least in programming, the use of logical connectives such as AND, AND NOT, OR and EXCLUSIVE OR, is fraught with human error, even among experts. The logical OR, especially in combination with bracketed expressions, is particularly inviting to human misunderstanding and error. These experiences have been taken seriously in formulating what orders of connective logic are permitted the user, and not offered to the user, in making up a single query.

The AND logic is ordinarily simple for the user to get accustomed to, especially if no compound statements are to be strung together. (The procedures do not allow compound statements.) Thus, the searcher may want to get a listing of all courses that provide Enabling Knowledge of "Procedural descriptions" AND in the Gross Job category of "Maintenance." The user quickly learns that only those items which are identified both as teaching procedural descriptions and that teach in the context of maintenance jobs will be selected by the query. (In preliminary training of the user, it would not be taken for granted that even this concept is self-evident.) The AND operation does not require terms in an expression to be logically grouped and sequentially ordered in any fashion.

The OR relationship has been arbitrarily allowed to apply to single descriptors, taken one at a time, within the same category. Descriptors within a category cannot logically be grouped by AND connectors and OR'd to another group of logically connected descriptors. The OR relationship can apply only between individual descriptors within a category. The selected content of one category cannot be OR'd with the content of another category. This would raise the potential logical complexity in a single query beyond what is felt to be a generally acceptable level.

The OR relationship within a category can be useful for several purposes. Assume that the searcher is not quite sure whether the task function he is concerned with is "Interpret" or "Decide." That is, he is not quite sure which of these terms was used to index the target material for which he is searching. To be safe, he can select both Interpret and Decide, which means that he will get entities that bear either one or the other term, or both. He can thus defer his decision on precise relevance until he sees further contextual information about the candidate items selected by his query. Note that this capability copes with some degree of ambiguity in descriptors, both as applied by indexers and by searchers.

The distinction between Inclusive OR and Exclusive OR was not considered operationally relevant to the ETAM application. The OR in ETAM procedures is an Inclusive OR--it does not care whether either one or the other, or both, the OR'd items describe the target entity.

If the searcher wants to widen his search universe more broadly than is permitted by the logical limitations in a single query format, he may use several queries, each of which is the equivalent to a complex OR to the other queries, and combine the results of the several queries. This avoids the convoluted thinking that is required for making a single, multilevel, search statement. If the cost of making even occasional logical errors is prorated across the additional time for making multiple queries, it is doubtful that any efficiency advantage would appear for the more complex procedures. "Logical elegance" in statement is not a relevant human factors criterion.

Finally, some comments are deserved about the ability to frame any query into the content of a single displayed page that is uncluttered with computerese jargon, and symbols that have no bearing on the user's objective--to formulate a search statement on the variables in which he is interested. It should be simple for the user to check over what he has entered, to know what he has done, and if he can recognize errors of omission or commission to correct them directly and at once; and if the response to the searcher's query appears to him like a tray full of nonsense, he can readily check back over the total content of the query he entered as a search argument and perhaps identify what was wrong with it. Thus, the data entry format and its contents is a useful documentation of the query both for diagnosing limitations in the search argument, or for purposefully modifying it.

The test of these rationales will come, of course, when samples of novice users are actually confronted with formats, terminals, and search problems. Assume familiarity with the meaning of the descriptors and with the purpose of the query operations. Within 15 to 60 minutes, the novice should be entering meaningful queries without assistance, and on the average make fewer than perhaps 5% errors in procedure that are not identified and corrected at once.

SEARCH STRATEGIES. The design of query structures, search systems and data bases should facilitate flexibility in the searcher's method of attack. That method may vary depending on the values in the search objective and on the information the searcher has at the beginning of the search. Both of these issues are joined in principles that embody search strategy. The definition of strategy here is to "optimize" an outcome for some given level of risk and effort, or conversely to minimize risk and effort in achieving some level of search outcome. These concepts should become clarified when some examples are examined of efficient search technique under various kinds of starting information.

The general strategic principle is to formulate queries at each stage of inquiry that eliminate the largest proportions of irrelevant entities from those entities that still remain to be searched. In practice, this means using descriptors that appear most rarely (as compared with other descriptors) in data base descriptions. In general, a unique identifier such as the "name" of a given entity is comparatively rare as an index term in a data base. An example in a job-task inventory would be the name of a piece of operational equipment such as "radar ABC-10." Note also that unlike entity attributes where meanings are inevitably ambiguous, a unique identifier is low in ambiguity. If the searcher knows that all of his ultimate target set of relevant entities will include "radar ABC-10" in their indexed descriptions, his first search query should include "radar ABC-10" as a search term. In this case, or one like it, the searcher would bypass the ETAM level of subject matter search and put his inquiry directly into the job-task inventory data base. To repeat, this assumes that entities in the job-task inventory are indexed by "equipment worked on" and that "radar ABC-10" is the descriptor, and the only descriptor, for that equipment, applied to relevant jobtask entities in that data base. (It is assumed that if a descriptor is assigned to an entity in a data base, that automatic search can be made on that descriptor or category of descriptors.) Call a descriptor that is a specific name for an entity, or for a set of equivalent entities, by the term "nominal descriptor." A query can include a number of nominal entities that are logically "OR'd" to each other if the query format permits, else a sequence of queries may achieve the same end.

The use of nominal descriptors does not entirely rule out the missing of relevant items. It is frequently possible that in the operational setting, a given object is treated as a component in a larger object, and only the latter is named as the descriptor. Thus, "radar ABC-10" may sometimes be a component in "radar system XYZ," and, if so, only the latter is identified. This is why the rules used by the indexer should be explicit and communicated to the searcher. Under conditions of uncertainty, and where it is important to determine maximum range of relevant entities, the only recourse is by proceeding from the more inclusive categories into contextual search. Contextual search is made when the searcher manually examines the full description of each entity after automatic search on descriptors has been carried as far as it is allowed safely to go.

When on the other hand the searcher is not sure of what he wants, or lacks nominal descriptors for narrowing the search quickly, he is advised to go broad at the start. This is because if relevant items are winnowed out at any stage of progressive search, they will not be examined again during that particular search cycle. Again, the tradeoff is between the risk of missing relevant items versus amount of effort spent in the total search and identify operation. The selection of an improperly limiting attribute in an early query can lock out

a large proportion of eligible entities. In bibliographic search the searcher may not care about seeing the "complete" set of potentially relevant documents, only some subset which is representative and falling within the limits of what he can assimilate. But in range-of-effect analysis, the searcher is properly concerned with the fullest possible range of applicability of the innovation. He is concerned with the application "universe," not a sample from it.

But even with this objective the maximum exclusion principle operates. When the searcher adds descriptors linked by AND, he is superimposing filters on the search. A carefully chosen AND NOT descriptor can filter out large subsets of data base entities that are irrelevant to the inquiry.

An ideal inquiry system would enable the searcher to examine an output listing (whatever its level or form) and randomly sample from its contents at the level of contextual detail. By this means he could often determine what further restrictions to put into his next queries. Note that here again there is a difference between bibliographic searches and range-of-effect search. In the former, the searcher may ask for the number of titles identified by the request applied to the data base. If the number exceeds some arbitrary limit set by the searcher, he may tighten his inquiry in an attempt to restrict the number of hits to a number he feels able to manage. The ETAM assessor, on the other hand, is obliged to attend to all relevant entities.

Even when the searcher is quite confident at the start that he can subset the data base with a definitive set of descriptors, he may be well advised to begin with a broader net. The starting assumptions of the relevant characteristics and boundaries of target entities may be revealed as too narrow. Inspecting even a few samples of context about entities not thought to be applicable could change preconceptions and enlarge the field. This might be called "strategic serendipity." A handy--and pertinent--example is "diagnostic technique" or troubleshooting. An innovation may, at the start, be identified as a training method for strategic diagnosis of equipment ailments. The method may be equally applicable to the diagnosis of human ailments. It is possible that some context in one or both may reveal that "search strategy" of the kind we are discussing in the present topic is equally applicable when appropriately defined--the strategic selection of a series of tests (queries) where each test in the series logically excludes from further suspicion (or relevance for further inquiry) some major segment of the equipment (data base). The potential applicability, hence value, of the innovation becomes greatly expanded.

In conclusion, search for information can combine efficiency and effectiveness, but depend on a combination of expertise and enabling knowledge. The knowledge applies to the defining concepts of the descriptor set, the rules used for indexing the target subject matter, and something about the contexts of those subject matters. The expertise applies to strategies used in searching large data banks as well as in overcoming information deficiencies that may exist in the searcher himself. As in other tasks that use strategies, the expert may achieve several times the results of a novice at a fraction of the time.

GENERAL CONCLUSIONS. These rationales are offered as justification for the decisions made in the section and formatting of ETAM descriptors and ETAM query procedures where simplicity for the user was traded off against semantic precision and logical universality. The user is offered flexibility in search method by not being ruled from proceeding directly to data base content if the knowledge of target objectives enables this to be done. The basis for choosing an alternative was described in the context of search strategies.

The functions of the human component in the search operation have been made explicit so that even in the default of automatic modes for aiding search, the searcher could do the job manually with file cards. In any event, the final judgment of the relevance or irrelevance of target entities must depend on human judgment operating on contextual information about those entities. That context may be in a printout or in the searcher's head, or a combination of both.

The combinations of all of these factors makes up an information search "system." The structure proposed here is sufficiently modular and simple in its interfaces and content to be readily changed when actual usage suggests modifications. It is realistic to expect demand for changes, but it is important to determine whether the change should be in elements of method, information content, or the rationales behind them.

APPENDIX B

KEY FIGURES AND ILLUSTRATIONS
REFERENCED IN THIS ETAM REPORT

| <u>FIGURE</u> | <u>TITLE</u> | <u>REFERENCE *</u> |
|---------------|---|--------------------|
| B-1 | Summarized Preliminary Feasibility Profile | III-48 |
| B-2 | Cost/Savings Data Sheet | III-56 |
| B-3 | Decision Tree for Assessment of Training Innovation (Example of Form Completed with Initial Outcome Values and Probabilities) | III-60 |
| B-4 | Decision Tree for Assessment of Training Innovation (Example of Folding Back Process) | III-61 |
| B-5 | Format for Describing a Supplementary Benefit or Liability | III-138 |

* The pages referenced in this Appendix are from:
Miller, Robert B. and Duffy, Larry R., 1975. Design of Training Systems Phase II-A Final Report. TAEG Report No. 12-3, Training Analysis and Evaluation Group, Orlando, FL. Chapter III.

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| SUBTASK | RISK DEGREE RISK ITEM | UNACCEPTABLY HIGH RISK OR OF TRIVIAL IMPORTANCE | MODERATE RISK OR OF MODERATE IMPORTANCE | NO RISK OR OF SUBSTANTIAL IMPORTANCE | SUPPORTIVE OR OF HIGH OR CRUCIAL IMPORTANCE | COMMENTS, NATURE OF RISK, ETC. | NUMBER OF RISK REDUCTION PROJECTS REQ'D AND IDENTIFIED | ESTIMATED PROJECT COSTS |
|---------|--|--|--|---|--|-----------------------------------|---|-------------------------------|
| 01 | IMPORTANCE TO PROJECTED NAVY MISSION | | | | | | | |
| 02 | ORGANIZATIONAL COMPATIBILITY | | | | | | | |
| 03 | GOALS/POLICY COMPATIBILITY | | | | | | | |
| 04 | STATE-OF-THE-ART | | | | | | | |
| 05 | R&D FUNDING REQUIREMENTS | | | | | | | |
| 06 | TECHNICAL SUPPORT REQUIREMENT | | | | | | | |
| 07 | ATTITUDINAL ACCEPTANCE | | | | | | | |
| | OVERALL PROFILE AND TOTAL PROJECTS AND DOLLARS | | | | | | | |

FIGURE B-1. SUMMARIZED PRELIMINARY FEASIBILITY PROFILE

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PRELIMINARY
COST ESTIMATE

NEW ☐ REVISED ☐

| | | | | | |
|---------------------------------|------------------------|-------------------------|-----------------|--------------------|-------------|
| PROJECT | PROJECT NAME | | | PROJECT NO. | DATE |
| PERSONNEL | | | | | |
| JOB | MAN MONTHS | COST/MAN MONTH | JOB COST | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | \$ | |
| EQUIPMENT | | | | | |
| DESCRIPTION | QUANTITY | UNIT COST | COST | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | \$ | |
| SPACE | | | | | |
| REASON | SQUARE FEET | COST/SQ. FT. | COST | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | \$ | |
| TRAVEL (NON-STUDENT) | | | | | |
| FROM - TO - REASON | NO. OF TRIPS | COST/TRIP | COST | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | \$ | |
| STUDENTS | | | | | |
| NO. OF STUDENTS - REASON | NO. OF DAYS | COST/STUDENT DAY | COST | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | \$ | |
| OTHER | | | | | |
| DESCRIPTION | MAN MONTHS/QTY. | UNIT COST | COST | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | \$ | |
| TOTAL PROJECT COSTS | | | | | \$ |

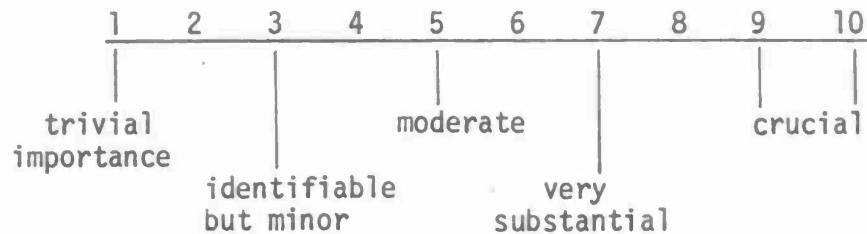
FIGURE B-2. COST/SAVINGS DATA SHEET



TASK: DETERMINE RANGE-OF-EFFECT

1. Identify the name of the variable or factor which is a supplemental benefit or a liability.
2. Estimate the magnitude of effect of the benefit/liability.
 - a. If possible, quantify the unit of magnitude, and the multiplier factor, to apply to the unit of magnitude appropriate to the intended scope of the application of the innovation.
 - b. If numerical quantification is impractical, express magnitudes in relative terms.
3. What is the number of entities or instances (jobs, courses, students, etc.) to which this magnitude of benefit (or liability) applies?
4. Estimate the relative importance of the added benefit (or liability) to the overall effectiveness of the innovation.

Use a scale from 1 to 10.



Any additional statements that may add or qualify information for the decision maker may be added informally.

5. Estimate the range across which the magnitude of benefit (or liability) may occur.
 - a. The estimate of magnitude made in item 2 presumably assumed conditions moderately favorable to the benefit occurring (or moderately unfavorable for the liability to occur) at that magnitude.
 - b. Estimate the magnitude of the benefit under conditions highly favorable for the innovation. (The converse for a liability.)
 - c. Estimate the magnitude of the benefit under conditions highly adverse to the innovation.
6. State reasons and justifications for these expectations.

FIGURE B-5. FORMAT FOR DESCRIBING A SUPPLEMENTARY BENEFIT OR LIABILITY

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APPENDIX C

TRAINING COST MODEL PROGRAM

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*****
* PROGRAM - TRAINING COST MODEL
* TECEP COST MODEL ADAPTATIONS FOR ETAM BY L. DUFFY
*
* THIS MODULE MUST BE MODIFIED WITH NEW READ AND
* FORMAT STATEMENTS TO RECEIVE DATA FROM THE
* ORIGINAL AND MODIFIED EXC FILE FROM THE ETAM
* PROJECT DATA BASE.
* THE MODULE PRESENTLY CYCLES AND DEVELOPS A
* MATRIX OF INVESTMENT AND RECURRING COST/SAVINGS
* DATA FOR EACH COURSE RUN UNDER BASELINE CONDITIONS
* AND THEN WITH THE BENEFIT PATTERN APPLIED.
*
* DATE - 3/4/77
*
*****

```

PROGRAM SETUP

```

REAL INTSPO,IMDDEV,MSCSPO,MSCSTD,IMDMNT,INSTSL,INFLAT,INRATE
REAL NSTUD,NTRAV,NINSTR,NADMIN,NFACIL,NSUPPL,NMISC,NEQUIP,NIMD
REAL ISTUD,ITRAV,IINSTR,IADMIN,IFACIL,ISUPPL,IMISC,IEQUIP,IIMD
INTEGER GRAD,PURCHF,AEQUIP,DEPF
INTEGER DIGIT(20) /1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,
17,18,19,20/
LOGICAL RPT1,RPT2,RPT3,RPT4,RPT5,RPT6,RPT7, LAST
DIMENSION STUD(20),GRAD(20),STUDMW(20),SMWRR(20),AOB(20),PSP(20)
DIMENSION RINSTR(20),RADMIN(20),REQUIP(20),RFACIL(20),IMDMNT(20)
DIMENSION RSUPPL(20),RMISC(20),CSTUD(20),CTRAV(20),CINSTR(20)
DIMENSION CADMIN(20),CEQUIP(20),PEQUIP(20),PDEP(20),AEQUIP(20)
DIMENSION COPMT(20),CFACIL(20),CIMDMT(20),CSUPPL(20)
DIMENSION CMISC(20),DISCNT(20),INFLAT(20),CGRAD(20),CSTIN(20)
DIMENSION CSP(20),MATA(100),MATB(100),COPTOT(20),MGRAD(20)
DIMENSION AOBX(20)
DIMENSION ETAINV(20),ETAREC(20),ETAGRD(20),ETASTU(20),ETAAOB(20)
DIMENSION ETAINS(20),ETAAOM(20),ETAEQP(20),ETAFAC(20),ETASUP(20)
DIMENSION ETAMIS(20),ETATO1(20),ETATO2(20),ETATO3(20),ETATO4(20)
DIMENSION ETATO5(20),ETATO6(20),ETATO7(20),ETATO8(20),ETATO9(20)
DIMENSION ETAT10(20),ETAT11(20)
COMMON/NOGOF/NOGO,K,MATA,MATB

```

```

***
*** ETAM DESIGN MOD - REMOVE 'NAMELIST' STATEMENTS AND SUBSTITUTE
*** 'FORMAT' STATEMENTS TO READ FROM EXC FILE,
*** ONCE UNDER BASELINE CONDITIONS, AND THEN WITH
*** THE BENEFIT PATTERN APPLIED TO INPUT VARIABLES.

```

```

NAMELIST/TECHF/ COURSE,N,ARATE,TLENGH,RCRATE,ARCYTM,WSCHOP,TSPOSD,
1INTSPO,AMTSPO,EQTSPO,PURCHF,DEPF,LOFEQ,SQFTST,SQFTIN,SQFTAM,IMDDEV
2,PUMD,UPDATE,SUPSPD,SUPSTD,MSCSPO,MSCSTD,PESP,TLENGH,LOFFA,WSHOP1
NAMELIST/COSTF/STUDSL,STCST1,STCST2,INSTSL,ADMSL,EQUINC,PCTPCH,CPS
1QFT,CIMD,EVIM,CSUPP,CMIS,DRATE,INRATE,FACST
NAMELIST/DIMDF/GRAD,COPMT

```

PROGRAM INITIALIZATION

```

***
*** ETAM DESIGN MOD - ETAM ENTRY POINT FOR START OF LOOP ONE.
*** INITIALIZE LOOP INDICATOR (IND1).

```

```

1 IND1 = 0

```

```

10 AASIN = 0.0
AAOB = 0.0
TINSTR = 0.0
TADMIN = 0.0
TEQUIP = 0.0
TFACIL = 0.0
TMDMNT = 0.0
TSUPPL = 0.0
TMISC = 0.0
TPEQUIP = 0.0
TAEQUIP = 0.0
DATA COURSE /'NONE'/

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TPEQUP= 0.0
 AAQUP= 0.0
 PURCHF= 99999
 DEPF = 99999
 KVEQ = 0.0
 RVFA = 0.0
 NSTUD = 0.0
 DSTUD = 0.0
 ISTUD = 0.0
 FSTUD = 0.0
 NTRAV = 0.0
 DTRAV = 0.0
 ITRAV = 0.0
 FTRAV = 0.0
 NINSTR= 0.0
 UINSTR= 0.0
 IINSTR= 0.0
 FINSTR= 0.0
 NADMIN= 0.0
 DADMIN= 0.0
 IADMIN= 0.0
 FADMIN= 0.0
 NFACIL= 0.0
 OFACIL= 0.0
 IFACIL= 0.0
 FFACIL= 0.0
 NSUPPL= 0.0
 DSUPPL= 0.0
 ISUPPL= 0.0
 FSUPPL= 0.0
 NMISC = 0.0
 DMISC = 0.0
 IMISC = 0.0
 FMISC = 0.0
 NEQUIP= 0.0
 DEQUIP= 0.0
 IEQUIP= 0.0
 FEQUIP= 0.0
 VIMD = 0.0
 DIMD = 0.0
 IIMD = 0.0
 FIMD = 0.0
 DAOB = 0.0
 SAOB = 0.0
 NOGO = 0
 IGRAD = 0
 IPSP = 0
 JAOB = 0
 AZATE = 99999.
 RC RATE = 99999.
 ALCYTM= 99999.
 WSC HOP= 99999.
 WSHOPI= 99999.
 TSPOSD= 99999.
 PESP = 99999.
 IVTSPD= 99999.
 AMTSPD= 99999.
 EQTSPD= 99999.
 LJFEQ = 99999.
 SQFTST= 99999.
 SQFTIN= 99999.
 SQFTAM= 99999.
 IMDDDEV= 99999.
 PUTMD = 99999.
 UPDATE= 99999.
 SJPSPO= 99999.
 SUPSTD= 99999.
 MSCSPO= 99999.
 MSCSTD= 99999.
 STUDSL= 99999.
 STCST1= 99999.
 STCST2= 99999.
 IVSTSL= 99999.
 AJMSL = 99999.
 EQUUTC= 99999.
 PC TPCH= 99999.
 CPSQFT= 99999.
 CIMD = 99999.

```

EVIM = 99999.
CSUPP = 99999.
CMIS = 99999.
DRATE = 99999.
INRATE = 99999.
N = 99999.
TLENGH = 99999.
TLEGTH = 99999.
FACST = 99999.
LJFFA = 99999.
K = 1
DO 20 I=1,20
CSTUD(I) = 0.0
CTRAV(I) = 0.0
CINSTR(I) = 0.0
CADMIN(I) = 0.0
CEQUIP(I) = 0.0
CFACIL(I) = 0.0
CIMDMT(I) = 0.0
CSUPPL(I) = 0.0
CMISC(I) = 0.0
CJPTOT(I) = 0.0
CGRAD(I) = 0.0
CSTIN(I) = 0.0
CSP(I) = 0.0
PDEP(I) = 0.0
AEQUIP(I) = 0.0
STUD(I) = 0.0
AJB(I) = 0.0
PSP(I) = 0.0
RINSTR(I) = 0.0
RADMIN(I) = 0.0
REQUIP(I) = 0.0
PEQUIP(I) = 0.0
AEQUIP(I) = 0.0
RFACIL(I) = 0.0
IMDMNT(I) = 0.0
RSUPPL(I) = 0.0
RMISC(I) = 0.0
AJBX(I) = 0.0
ETAGRD(I) = 0.0
ETASTU(I) = 0.0
ETAAQB(I) = 0.0
ETAINS(I) = 0.0
ETAADM(I) = 0.0
ETAEQP(I) = 0.0
ETAFAC(I) = 0.0
ETASUP(I) = 0.0
ETAMIS(I) = 0.0
ETAINV(I) = 0.0
ETAREC(I) = 0.0
GRAD(I) = 99999.
CJPMT(I) = 99999.
20 CONTINUE

```

READ INPUT DATA

```

***
*** ETAM DESIGN MOD - CHANGE 'READ' STATEMENTS TO READ FROM ORIGINAL
*** AND MODIFIED (WITH BENEFIT PATTERN) EXC FILE.
***

```

```

READ(5,TECHF)
READ(5,COSTF)
READ(5,DIMDF)

```

```

***
*** ETAM DESIGN MOD - A LOGICAL '1' IN ITS RESPECTIVE POSITION
*** SELECTS A REPORT. THESE SHOULD BE SELECTABLE
*** INTERACTIVELY. THE REPORT NAMES ARE:
*** RPT1 - INPUT TECHNICAL FACTORS
*** RPT2 - INPUT COST FACTORS
*** RPT3 - OUTPUT TECHNICAL RESULTS (TOTAL)
*** RPT4 - OUTPUT TECHNICAL RESULTS (ANNUAL)
*** RPT5 - OUTPUT COST RESULTS (TOTAL)
*** RPT6 - OUTPUT COST RESULTS (ANNUAL)
*** RPT7 - MISSING DATA ANALYSIS
*** LAST - INDICATES LAST INPUT STREAM DATA CASE
***

```

```

READ(5,6000) RPT1,RPT2,RPT3,RPT4,RPT5,RPT6,RPT7, LAST

```


6000 FORMAT (8L1)

READ MISSING DATA ANALYSIS AND DEFAULT ROUTINES

ETAM DESIGN MOD - EACH INPUT VARIABLE IS CHECKED FOR PRESENCE AND REASONABILITY. MISSING OR OUT-OF-RANGE DATA ARE RECORDED BY STATEMENT NUMBER BY THE 'MISSING SUBROUTINE'. VARIABLES WITH REASONABLE DEFAULT SUBSTITUTES HAVE A CRITICALITY CODE=1, VARIABLES WITH NO DEFAULT DATA HAVE CRIT CODE=0. FOLLOWING IS A LIST OF VARIABLES BY STATEMENT NUMBER INCLUDING CRIT CODE AND PRESENT DEFAULT VALUE.

| NO. | VAR NAME | DESCRIPTION | DEFAULT | CRIT |
|-----|----------|------------------------|-------------|------|
| 30 | N | PLANNING PERIOD | 20 | 1 |
| 40 | ARATE | ATTRITION RATE | 0.0 | 1 |
| 50 | TLENGH | TRAINING LENGTH (WKS) | - | 0 |
| 55 | TLEGTH | HRS/WK IN MEDIUM | 40.0 | 1 |
| 60 | RCRATE | RECYCLE RATE | .5*ARATE | 1 |
| 90 | WSCHOP | WKS/YR SCHOOL OPER | 50.0 | 1 |
| 95 | WSHOP1 | TRAINING WKS/YR | 50.0 | 1 |
| 100 | TSPDSD | TIME STUD POS DOWN | 0.0 | 1 |
| 110 | PESP | EXCESS STUD POSITIONS | 0.10 | 1 |
| 120 | INTSPO | INST/STUD POS RATIO | 0.0 | 1 |
| 130 | AMTSPO | ADMIN/STUD " | 0.0 | 1 |
| 140 | EQTSPD | EQUIP/STUD " | CONDITIONAL | 0/1 |
| 160 | PURCHF | EQUIP PURCHASE POLICY | 1 | 1 |
| 170 | DEPF | EQUIP DEPRECIATION " | 1 | 1 |
| 175 | LOFFA | LIFE OF FACILITY (YRS) | N | 1 |
| 180 | LOFEQ | LIFE OF EQUIPMENT | CONDITIONAL | 0/1 |
| 200 | SQFTST | SQ FT/STUDENT | 0.0 | 1 |
| 210 | SQFTIN | SQ FT/INSTRUCTOR | 0.0 | 1 |
| 220 | SQFTAM | SQ FT/ADMINISTRATIVE | 0.0 | 1 |
| 230 | IMDDEV | INSTR MAT DEV RATIO | CONDITIONAL | 0/1 |
| 270 | UPDATE | INSTR MAT MAINT | CONDITIONAL | 0/1 |
| 290 | SUPSPD | SUPPLIES/STUD POS | 0.0 | 1 |
| 300 | SUPSTD | SUPPLIES/STUDENT | 0.0 | 1 |
| 310 | MSCSPD | MISC/STUDENT POS | 0.0 | 1 |
| 320 | MSCSTD | MISC/STUDENT | 0.0 | 1 |
| 330 | STUDSL | STUDENT SALARY | 0.0 | 1 |
| 340 | STCST1 | TRAVEL TO/FROM SCHOOL | 0.0 | 1 |
| 350 | STCST2 | TRAVEL DURING SCHOOL | 0.0 | 1 |
| 360 | INSTSL | INSTRUCTOR SALARY | 0.0 | 1 |
| 370 | ADMSL | ADMINISTRATIVE SALARY | 0.0 | 1 |
| 380 | EQUINTC | EQUIP UNIT COST | CONDITIONAL | 0/1 |
| 400 | PCTPCH | PCT MAX EQUIP PURCH | 0.0 | 1 |
| 410 | CPSQFT | COST/SQ FT | 0.0 | 1 |
| 420 | CIMD | COST/HR INSTR MAT DEV | 0.0 | 1 |
| 430 | EVIM | ANNUAL MAINTENANCE PCT | 0.0 | 1 |
| 440 | CSUPP | COST OF SUPPLIES | 0.0 | 1 |
| 450 | CMIS | COST OF MISCELLANEOUS | 0.0 | 1 |
| 460 | DRATE | DISCOUNT RATE | 0.10 | 1 |
| 470 | INRATE | INFLATION RATE | 0.08 | 1 |
| 475 | FACST | FACIL ACQ/REFURB COST | 0.0 | 1 |
| 480 | GRAD | GRADUATES EACH YEAR | - | 0 |
| 490 | COPMT | O&M COSTS EACH YEAR | 0.0 | 1 |

30 IF (N.GT.0.AND.V.LE.20) GO TO 40

N = 20

CALL MISSING (30,1)

40 IF (ARATE.GE.0..AND.ARATE.LT.1.) GO TO 50

ARATE = 0.0

CALL MISSING (40,1)

50 IF (TLENGH.GT.0..AND.TLENGH.LT.200.) GO TO 55

CALL MISSING (50,0)

55 IF (TLEGTH.GT.0..AND.TLEGTH.LT.121.) GO TO 60

TLEGTH = 40.0

CALL MISSING (55,1)

60 IF (RCRATE.GE.0..AND.RCRATE.LT.1.) GO TO 70

RCRATE = .5*ARATE

CALL MISSING (60,1)

70 IF (ARCYTM.GE.0..AND.ARCYTM.LT.200.) GO TO 90

IF (RCRATE.EQ.0.) GO TO 80

IF (TLENGH.LT.2.) GO TO 80

CALL MISSING (70,0)

GO TO 90

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80 ARCYTM= 0.0
  CALL MISSNG (70,1)
90 IF (WSCHOP.GT.0..AND.WSCHOP.LE.52.) GO TO 95
  WSCHOP= 50.0
  CALL MISSNG (90,1)
95 IF (WSHOP1.GT.0..AND.WSHOP1.LE.150.) GO TO 100
  WSHOP1 = 50.0
  CALL MISSNG (95,1)
100 IF (TSPOSD.GE.0..AND.TSPOSD.LT.1.) GO TO 110
  TSPOSD= 0.0
  CALL MISSNG (100,1)
110 IF (PESP.GE.0..AND.PESP.LE.1.) GO TO 120
  PESP = 0.1
  CALL MISSNG (110,1)
120 IF (INTSPO.GE.0..AND.INTSPO.LE.1.) GO TO 130
  INTSPO= 0.0
  CALL MISSNG (120,1)
130 IF (AMTSPO.GE.0..AND.AMTSPO.LE.1.) GO TO 140
  AMTSPO= 0.0
  CALL MISSNG (130,1)
140 IF (EQTSPU.GE.0..AND.EQTSPU.LE.1.) GO TO 160
  IF (EQUQTC.NE.99999..AND.EQUQTC.NE.0.) GO TO 150
  IF (LOFEQ.NE.99999..AND.LOFEQ.NE.0) GO TO 150
  EQTSPU= 0.0
  CALL MISSNG (140,1)
  GO TO 160
150 CALL MISSNG (140,0)
160 IF (PURCHF.GE.1..AND.PURCHF.LT.10) GO TO 170
  PURCHF= 1
  CALL MISSNG (160,1)
170 IF (DEPF.GE.1..AND.DEPF.LT.10) GO TO 175
  DEPF = 1
  CALL MISSNG (170,1)
175 IF (LOFFA.GE.1..AND.LOFFA.LE.50) GO TO 180
  LOFFA = N
  CALL MISSNG (175,1)
180 IF (LOFEQ.GE.1..AND.LOFEQ.LE.50) GO TO 200
  IF (EQTSPU.NE.0.) GO TO 190
  IF (EQUQTC.NE.99999..AND.EQUQTC.NE.0.) GO TO 190
  LOFEQ = N
  CALL MISSNG (180,1)
  GO TO 200
190 CALL MISSNG (180,0)
200 IF (SQFTST.GE.0..AND.SQFTST.LT.1000.) GO TO 210
  SQFTST= 0.0
  CALL MISSNG (200,1)
210 IF (SQFTIN.GE.0..AND.SQFTIN.LT.1000.) GO TO 220
  SQFTIN= 0.0
  CALL MISSNG (210,1)
220 IF (SQFTAM.GE.0..AND.SQFTAM.LT.1000.) GO TO 230
  SQFTAM= 0.0
  CALL MISSNG (220,1)
230 IF (IMDDEV.GE.0..AND.IMDDEV.LT.1000.) GO TO 250
  IF (PUIMD.GT.0..AND.PUIMD.LE.1.) GO TO 240
  IF (UPDATE.GT.0..AND.UPDATE.LE.1.) GO TO 240
  IMDDEV= 0.0
  CALL MISSNG (230,1)
  GO TO 250
240 CALL MISSNG (230,0)
250 IF (PUIMD.GT.0..AND.PUIMD.LE.1.) GO TO 270
  IF (IMDDEV.NE.0.) GO TO 260
  IF (UPDATE.GT.0..AND.UPDATE.LE.1.) GO TO 260
  PUIMD = 1.0
  CALL MISSNG (250,1)
  GO TO 270
260 CALL MISSNG (250,0)
270 IF (UPDATE.GE.0..AND.UPDATE.LE.1.) GO TO 290
  IF (IMDDEV.NE.0.) GO TO 280
  IF (PUIMD.GT.0..AND.PUIMD.LT.1.) GO TO 280
  UPDATE= 0.0
  CALL MISSNG (270,1)
  GO TO 290
280 CALL MISSNG (270,0)
290 IF (SUPSPO.GE.0..AND.SUPSPO.LT.1000.) GO TO 300
  SUPSPO= 0.0
  CALL MISSNG (290,1)
300 IF (SUPSTD.GE.0..AND.SUPSTD.LT.1000.) GO TO 310
  SUPSTD= 0.0

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STUD(I) = GRAD(I)/(1.0-ARATE)
IGRAD = IGRAD+GRAD(I)
AASIN = AASIN+STUD(I)
STUDMW(I) = (TLEVGH*STUD(I))*(1.0-.5*ARATE)
SMWRRC(I) = RCRATE*STUD(I)*ARCYTM
AOB(I) = (STUDMW(I)+SMWRRC(I))/WSCHOP
DAOB = DOAB + (AOB(I)-AOBX(I))
SAOB = SAOB + AOB(I)
AAOB = AAOB+AOB(I)
PSP(I) = (((AOB(I)*WSHOP1/WSCHOP)/(1.0-TSPOSD))*(1.0+PESP))
IPSP = IPSP+PSP(I)
RINSTR(I) = PSP(I)*INTSPO
TINSTR = TINSTR+RINSTR(I)
RADMIN(I) = PSP(I)*AMTSPO
TADMIN = TADMIN+RADMIN(I)
REQUIP(I) = PSP(I)*EQTSPD
TEQUIP = TEQUIP+REQUIP(I)
RFACIL(I) = PSP(I)*(SQFTST+INTSPO*SQFTIN+AMTSPO*SQFTAM)
TFACIL = TFACIL+RFACIL(I)
IMDMNT(I) = UIMDTM*UPDATE
TMDMNT = TMDMNT+IMDMNT(I)
RSUPPL(I) = PSP(I)*SUPSPO+STUD(I)*SUPSTD
TSUPPL = TSUPPL+RSUPPL(I)
RMISC(I) = PSP(I)*MSCSPO+STUD(I)*MSCSTD
JAOB = JAOB+AOBX(I)
TMISC = TMISC+RMISC(I)

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COURSE TECHNICAL FACTORS TO ACCUMULATE FOR ETAM CMR FILE

```

ETAGRD(I) = GRAD(I)
ETASTU(I) = STUD(I)
ETAAOB(I) = AOB(I)
ETAINS(I) = RINSTR(I)
ETAADM(I) = RADMIN(I)
ETAEQP(I) = REQUIP(I)
ETAFAC(I) = RFACIL(I)
ETASUP(I) = RSUPPL(I)
520 ETAMIS(I) = RMISC(I)
IF (DAOB.LT.0.) DAOB=DAOB*(-1.)
IAOB = ((DAOB/SAOB)+.5)*100
IF (IAOB.GT.5.AND.JAOB.NE.0) CALL MISSNG (520,IAOB)
AASIN = AASIN/N
AGRAD = IGRAD/N
AAOB = AAOB/N
APSP = IPSP/N
AINSTR = TINSTR/N
AADMIN = TADMIN/N
AEQP = TEQUIP/N
AFACIL = TFACIL/N
AIMDMT = TMDMNT/N
ASUPPL = TSUPPL/N
AMISC = TMISC/N

```

THIS ROUTINE CALCULATES EQUIPMENT PURCHASE AND DEPRECIATION
SCHEDULES FROM USER SELECTED POLICY OPTIONS

- PURCHASE POLICIES ANALYSIS

GO TO (530,540,550,560,570,580,590,600,610),PURCHF

POLICY 1 - PURCHASE TOTAL AVERAGE RQMTS
IN FIRST YEAR OF EQUIP LIFE

```

530 CONTINUE
DO 534 I=1,N,LOFEQ
TEMP1 = 0.0
INDEX1= LOFEQ+I-1
DO 532 J=I,INDEX1
TEMP1 = REQUIP(J)+TEMP1
532 CONTINUE
PEQUIP(I)= TEMP1/LOFEQ
534 CONTINUE
GO TO 620

```

POLICY 2 - PURCHASE TOTAL PERCENT OF MAXIMUM
RQMTS IN FIRST YEAR OF EQUIP LIFE

```

540 CONTINUE
DO 544 I=1,N,LOFEQ
TEMP1 = 0.0
INDEX1= LOFEQ+I-1

```

DJ 542 J=1,INDEX1
 IF (TEMP1.LT.REQUIP(J)) TEMP1=REQUIP(J)
 542 CONTINUE
 PEQUIP(I)= TEMP1*PCTPCH
 544 CONTINUE
 GJ TO 620

POLICY 3 - PURCHASE UP TO AVERAGE RQMTS BUT
 NOT EXCEEDING RQMTS IN YR OF PURCH

550 CONTINUE
 DD 558 I=1,N,LOFEQ
 TEMP1 = 0.0
 INDEX1= LOFEQ+I-1
 DJ 552 J=1,INDEX1
 TEMP1 = REQUIP(J)+TEMP1
 552 CONTINUE
 PEQUIP(I)= TEMP1/LOFEQ
 IF (PEQUIP(I).LE.REQUIP(I)) GO TO 558
 TEMP1 = PEQUIP(I)
 INDEX1= LOFEQ+I-1
 DJ 556 J=1,INDEX1
 IF (TEMP1.LE.0.) GO TO 556
 IF (TEMP1.GT.REQUIP(J)) PEQUIP(J)=REQUIP(J)
 IF (TEMP1.LE.REQUIP(J)) PEQUIP(J)=TEMP1
 TEMP1 = TEMP1-PEQUIP(J)
 556 CONTINUE
 558 CONTINUE
 GO TO 620

POLICY 4 - PURCHASE UP TO PCT OF MAX RQMTS BUT
 NOT EXCEEDING RQMTS IN YR OF PURCH

560 CONTINUE
 DD 568 I=1,N,LOFEQ
 TEMP1 = 0.0
 INDEX1= LOFEQ+I-1
 DJ 562 J=1,INDEX1
 IF (TEMP1.LT.REQUIP(J)) TEMP1=REQUIP(J)
 562 CONTINUE
 PEQUIP(I)= TEMP1*PCTPCH
 IF (PEQUIP(I).LE.REQUIP(I)) GO TO 568
 TEMP1 = PEQUIP(I)
 INDEX1= LOFEQ+I-1
 DJ 566 J=1,INDEX1
 IF (TEMP1.LE.0.) GO TO 566
 IF (TEMP1.GT.REQUIP(J)) PEQUIP(J)=REQUIP(J)
 IF (TEMP1.LE.REQUIP(J)) PEQUIP(J)=TEMP1
 TEMP1 = TEMP1-PEQUIP(J)
 566 CONTINUE
 568 CONTINUE
 GJ TO 620
 570 GO TO 530
 580 GO TO 530
 590 GO TO 530
 600 GO TO 530
 610 GO TO 530

- DEPRECIATION POLICIES ANALYSIS

620 GO TO (630,640,650,660,670,680,690,700,710) , DEPF

POLICY 1 - DEPRECIATE LINEARLY OVER
 LIFE OF EQUIPMENT

630 CONTINUE
 TEMP2 = LOFEQ
 DJ 632 I=1,LOFEQ
 TEMP1 = I
 PDEP(I) = TEMP1/TEMP2
 632 CONTINUE
 GO TO 730

POLICY 2 - DEPRECIATE BY SUM-OF-DIGITS
 OVER LIFE OF EQUIPMENT

640 CONTINUE
 SUM = 0.0
 DD 642 I=1,LOFEQ
 SUM = SUM+I
 642 CONTINUE
 PDEP(1) = (LOFEQ)/SUM
 DJ 644 I=2,LOFEQ
 PDEP(I) = (LOFEQ-I)/SUM+PDEP(I-1)
 644 CONTINUE

GO TO 730

POLICY 3 - SET DEPRECIATION SCHEDULE
TO FULLY DEPRECIATED ALL YEARS

650 CONTINUE
 DO 652 I=1, LOFEQ
 PDEP(I) = 0.0
 652 CONTINUE
 GO TO 730
 660 GO TO 630
 670 GO TO 630
 680 GO TO 630
 690 GO TO 630
 700 GO TO 630
 710 GO TO 630

- COST FACTORS

730 L = N+1
 IF (L.GT.20) GO TO 750
 DO 740 I=L,20
 GRAD(I) = 0
 740 COPMT(I) = 0.0
 750 CONTINUE
 TOTAEQ = 0.0
 DO 790 I=1,N
 CSTUD(I) = ((STUDMW(I)+SMWRR(I))/52)*STUDSL
 CTRAV(I) = STUD(I)*(STCST1+STCST2*(1.0-.5*ARATE))
 CINSTR(I) = RINSTL
 CADMIN(I) = RADMIN(I)*ADMSTL
 TPEQUP = TPEQUP+PEQUIP(I)
 INDEX4 = PEQUIP(I)+0.5
 PEQUIP(I) = INDEX4
 CEQUIP(I) = PEQUIP(I)*EQUNTC
 LIFERV = I+LOFEQ-N-1
 IF (LIFERV.LE.0) GO TO 760
 RVEQ = RVEQ+CEQUIP(I)*PDEP(LIFERV)
 760 CONTINUE
 TOTAEQ = TOTAEQ+PEQUIP(I)
 AEQUIP(I) = TOTAEQ
 TAEQUP = TAEQUP+AEQUIP(I)
 LOBSLT = I-LOFEQ
 IF (LOBSLT.LE.0) GO TO 770
 TOTAEQ = TOTAEQ-PEQUIP(LOBSLT)
 AEQUIP(I) = TOTAEQ
 770 CSUPPL(I) = RSUPPL(I)*CSUPP
 CMISC(I) = RMISC(I)*CMIS
 CINV1 = CEQUIP(I)
 CREC1 = AEQUIP(I)*COPMT(I)
 CREC2 = RFACIL(I)*CPSQFT
 CREC3 = IMDMNT(I)*CIMD
 CRECT = CREC1 + CREC2 + CREC3 + CSTUD(I) + CTRAV(I) + CINSTR(I) +
 CADMIN(I) + CSUPPL(I) + CMISC(I)

COURSE COST FACTORS TO ACCUMULATE FOR ETAM CHR FILE

- FIRST YEAR

IF (I.NE.1) GO TO 771
 ETAINV(1) = CINV1 + FACST + CUIMD
 CFACIL(1) = CREC2 + FACST
 CIMDMT(1) = CREC3 + CUIMD
 771 IF (I.EQ.1) GO TO 772

- REMAINING YEARS

ETAINV(I) = CINV1
 CFACIL(I) = CREC2
 CIMDMT(I) = CREC3
 772 ETAREC(I) = CRECT
 CEQUIP(I) = CINV1 + CREC1
 IF (I.NE.N) GO TO 773
 ETAINV(N) = ETAINV(N) - RVEQ - RFVA - RVIM
 773 CONTINUE

- COST SUMMARIZATION

DISCNT(I) = (2.0+DRATE)/(2.0*(1.0+DRATE)**I)


```

INFLAT(I) = (2.0*(1.0+INRATE)**I)/(2.0+INRATE)
NSTUD      = NSTUD+CSTUD(I)
DSTUD      = DSTUD+CSTUD(I)*DISCNT(I)
ISTUD      = ISTUD+CSTUD(I)*INFLAT(I)
FSTUD      = FSTUD+CSTUD(I)*INFLAT(I)*DISCNT(I)
NTRAV      = NTRAV+CTRAV(I)
DTRAV      = DTRAV+CTRAV(I)*DISCNT(I)
ITRAV      = ITRAV+CTRAV(I)*INFLAT(I)
FTRAV      = FTRAV+CTRAV(I)*INFLAT(I)*DISCNT(I)
NINSTR      = NINSTR+CINSTR(I)
DINSTR      = DINSTR+CINSTR(I)*DISCNT(I)
IINSTR      = IINSTR+CINSTR(I)*INFLAT(I)
FINSTR      = FINSTR+CINSTR(I)*INFLAT(I)*DISCNT(I)
NADMIN      = NADMIN+CADMIN(I)
DADMIN      = DADMIN+CADMIN(I)*DISCNT(I)
IADMIN      = IADMIN+CADMIN(I)*INFLAT(I)
FADMIN      = FADMIN+CADMIN(I)*INFLAT(I)*DISCNT(I)
NSUPPL      = NSUPPL+CSUPPL(I)
DSUPPL      = DSUPPL+CSUPPL(I)*DISCNT(I)
ISUPPL      = ISUPPL+CSUPPL(I)*INFLAT(I)
FSUPPL      = FSUPPL+CSUPPL(I)*INFLAT(I)*DISCNT(I)
NMISC      = NMISC+CMISC(I)
DMISC      = DMISC+CMISC(I)*DISCNT(I)
IMISC      = IMISC+CMISC(I)*INFLAT(I)
FMISC      = FMISC+CMISC(I)*INFLAT(I)*DISCNT(I)
IF (I.NE.N) GO TO 780
CEQUIP(I) = CEQUIP(I)-RVEQ
CIMDMT(I) = CIMDMT(I)-RVIM
780  NEQUIP      = NEQUIP+CEQUIP(I)
CFACIL(I) = CFACIL(I)-RFVA
DEQUIP      = DEQUIP+CEQUIP(I)*DISCNT(I)
IEQUIP      = IEQUIP+CEQUIP(I)*INFLAT(I)
FEQUIP      = FEQUIP+CEQUIP(I)*INFLAT(I)*DISCNT(I)
NIMD      = NIMD+CIMDMT(I)
OIMD      = OIMD+CIMDMT(I)*DISCNT(I)
IIMD      = IIMD+CIMDMT(I)*INFLAT(I)
FIMD      = FIMD+CIMDMT(I)*DISCNT(I)*INFLAT(I)
NFACIL      = NFACIL+CFACIL(I)
DFACIL      = DFACIL+CFACIL(I)*DISCNT(I)
IFACIL      = IFACIL+CFACIL(I)*INFLAT(I)
FFACIL      = FFACIL+CFACIL(I)*INFLAT(I)*DISCNT(I)
COPTOT(I) = CSTUD(I)+CTRAV(I)+CINSTR(I)+CADMIN(I)+CFACIL(I)
1  +CIMDMT(I)+CSUPPL(I)+CMISC(I)+CEQUIP(I)
CGRAD(I) = COPTOT(I)/GRAD(I)
CSTIN(I) = COPTOT(I)/STUD(I)
790  CSP(I)      = COPTOT(I)/PSP(I)
APEQU      = TPEQU/N
AAEQU      = TAEQU/N
SNAOC = NSTUD+NTRAV+NINSTR+NADMIN+NFACIL+NSUPPL+NMISC+NEQUIP+NIMD
SDAOC = DSTUD+DTRAV+DINSTR+DADMIN+DFACIL+DSUPPL+DMISC+DEQUIP+DIMD
SIAOC = ISTUD+ITRAV+IINSTR+IADMIN+IFACIL+ISUPPL+IMISC+IEQUIP+IIMD
SFAOC = FSTUD+FTRAV+FINSTR+FADMIN+FFACIL+FSUPPL+FMISC+FEQUIP+FIMD
GNAOC = SNAOC/IGRAD
GDAOC = SDAOC/IGRAD
GIAOC = SIAOC/IGRAD
GFAOC = SFAOC/IGRAD
UNAOC = SNAOC/(AASIN*N)
UDAOC = SDAOC/(AASIN*N)
UIAOC = SIAOC/(AASIN*N)
UFAOC = SFAOC/(AASIN*N)
PVAOC = SNAOC/IPSP
PDAOC = SDAOC/IPSP
PIAOC = SIAOC/IPSP
PFAOC = SFAOC/IPSP
DRATE = DRATE*100.
INRATE = INRATE*100.

C
C
WRITE INPUT TECHNICAL FACTORS
900 IF (.NOT.RPT1) GO TO 910
WRITE (6,1000) COURSE,DRATE,N,INRATE,(GRAD(I),I=1,10),
1  (GRAD(I),I=11,20),ARATE,TSPOSD,TLENGTH,PESP,RCRATE,
2  EQTSPO
1000 FORMAT ('1',28X,'COURSE COST ANALYSIS',/,1X,'INPUT:',/,3X,
1  'COURSE NUMBER - ',A4,25X,'DISCOUNT RATE - ',F4.1,
2  'PERCENT',/,3X,'PLANNING PERIOD - ',I2,27X,
3  'INFLATION RATE - ',F4.1,'PERCENT',/,1X,
4  'INPUT TECHNICAL FACTORS:',/,3X,'PLNG YR', ' 1      2',

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TAEG REPORT NO. 40

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5      10',/,3X,'GRADS-',10(1X,16),/,3X,'PLNG YR',,11',,
6      12',/,3X,'GRADS-',10(1X,16),/,3X,'PLNG YR',,18',,
7      20',/,3X,'GRADS-',10(1X,16),/,3X,'PLNG YR',,19',,
8      ATTRITION RATE (PCT) -',F4.2,8X,
9      TIME STUD POS DOWN (PCT) -',F3.2,/,3X,
10     TRAINING LENGTH (WKS) -',F5.1,9X,
11     PCT EXTRA STUD POSITIONS -',F3.2,/,3X,
12     RECYCLE RATE (PCT) -',F3.2,8X,
13     EQUIP/STUD POS RATIO -',F4.2,
14     WRITE (6,1010) ARCYTM,TLEGT,WSCHOP,IMDDEV,INTSPO,PUIMD,
15     AMTSPO,UPDATE,SQFTST,EVIM,SQFTIN,SUPSPD,SQFTAM,
16     SUPSTD,PURCHF,MSCSPO,DEPF,MSCSTD,WSHOP1
1010  FORMAT (3X,
17     'AVE. RECYCLE TIME (WKS)-',F4.1,9X,
18     'TIME IN MEDIUM -',F5.1,/,3X,
19     'WEEKS SCHOOL OPERATES -',F4.1,9X,
20     'COURSE DEV HRS/COURSE HR -',F5.1,/,3X,
21     'INSTR/STUD POS RATIO -',F5.2,8X,
22     'PCT COURSE REQUIRING DEV.-',F4.2,/,3X,
23     'ADMIN/STUD POS RATIO -',F4.3,7X,
24     'PCT INSTR MAT. MAINTAINED-',F3.2,/,3X,
25     'SQ FEET/STUDENT POS. -',F6.2,8X,
26     'PCT INSTR MAT. RMNG VALUE-',F3.2,/,3X,
27     'SQ FEET/INSTR. POS. -',F6.2,8X,
28     'SUPPLIES/STUDENT POSITION-',F5.1,/,3X,
29     'SQ FEET/ADMIN POS. -',F6.2,8X,
30     'SUPPLIES/STUDENT -',F5.1,/,3X,
31     'PURCHASE POLICY -',I1,11X,
32     'MISC/STUDENT POSITION -',F5.1,/,3X,
33     'DEPRECIATION POLICY -',I1,11X,
34     'MISC/STUDENT -',F5.1,/,3X,
35     'WEEKS SCHOOL AVAILABLE -',F4.1)
36
37  CC  WRITE INPUT COST FACTORS
38
39  910  IF (.NOT.RPT2) GO TO 920
40      WRITE (6,1001) COURSE,DRATE,N,INRATE,(COPMT(1),I=1,10),
41      (COPMT(1),I=11,20),STUDSL,CIMD,STCST1,CSUPP,STCST2,
42      CMIS,INSTSL,PCTPCH,ADMISL,CPSQFT
43  1001  FORMAT ('1',28X,'COURSE COST ANALYSIS',/,1X,'INPUT:',/,3X,
44      'COURSE NUMBER -',A4,25X,'DISCOUNT RATE -',F4.1,
45      'PERCENT',/,3X,'PLANNING PERIOD -',I2,27X,
46      'INFLATION RATE -',F4.1,'PERCENT',/,1X,
47      'INPUT COST FACTORS:',/,3X,'PLNG YR',,1',,2',,
48      10',/,3X,'O&MN-',10(1X,F6.0),/,3X,'PLNG YR',,11',,
49      12',/,3X,'O&MN-',10(1X,F6.0),/,3X,'PLNG YR',,18',,
50      19',/,3X,'O&MN-',10(1X,F6.0),/,3X,'PLNG YR',,
51      'STUDENT SALARY (ANNUAL)-',F8.2,6X,
52      'COST/HR OF INSTR MAT DEV -',F6.2,/,3X,
53      'STUD TRAVEL TO/FROM -',F7.2,6X,
54      'SUPPLIES COST -',F6.2,/,3X,
55      'STUD TRAVEL IN COURSE -',F7.2,6X,
56      'MISCELLANEOUS COST -',F6.2,/,3X,
57      'INSTR SALARY (ANNUAL) -',F8.2,6X,
58      'PCT MAX EQUIP PURCHASED -',F4.2,/,3X,
59      'ADMIN SALARY (ANNUAL) -',F8.2,6X,
60      'FACILITY COST/SQ FOOT -',F6.2)
61      WRITE (6,1007) EQUNTC,LOFEQ,FACST,LOFFA
62  1007  FORMAT (3X,
63      'EQUIPMENT UNIT COST -',F9.2,6X,
64      'LIFE OF EQUIPMENT -',I2,/,3X,
65      'FACIL INIT/REFURB COST -',F9.2,6X,
66      'LIFE OF FACILITY -',I2)
67
68  CC  WRITE SUMMARY OF ANNUAL TECHNICAL RESULTS
69
70  920  IF (.NOT.RPT3) GO TO 930
71      WRITE (6,1003) COURSE,DRATE,N,INRATE,AGRAD,AASIN,AAOB,APSP,
72      AINSTR,AADMIN,AEQUP,APEQUP,AAEQUP,AFACIL,AIMDMT,
73      ASUPPL,AMISC
74  1003  FORMAT ('1',28X,'COURSE COST ANALYSIS',/,1X,'INPUT:',/,3X,
75      'COURSE NUMBER -',A4,25X,'DISCOUNT RATE -',F4.1,
76      'PERCENT',/,3X,'PLANNING PERIOD -',I2,27X,
77      'INFLATION RATE -',F4.1,'PERCENT',/,1X,
78      'OUTPUT TECHNICAL RESULTS:',/,3X,
79      'AVE. NO. OF GRADUATES RQD -',F10.1,/,3X,

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| | | | |
|---|--------------------------------|---|--------------|
| F | 'AVE. NO. OF STUDENTS IN | - | 'F10.1,/,3X, |
| G | 'AVE. AVERAGE ON BOARD | - | 'F10.1,/,3X, |
| H | 'AVE. NO. OF STUDENT POSITIONS | - | 'F10.1,/,3X, |
| I | 'AVE. NO. OF INSTRUCTORS RQD | - | 'F10.1,/,3X, |
| J | 'AVE. NO. OF ADMIN PERS RQD | - | 'F10.1,/,3X, |
| K | 'AVE. NO. OF EQUIPMENTS RQD | - | 'F10.1,/,3X, |
| L | 'AVE. ANNUAL EQUIP PURCHASES | - | 'F10.1,/,3X, |
| M | 'AVE. ANNUAL EQUIP AVAILABLE | - | 'F10.1,/,3X, |
| N | 'AVE. NO. SQUARE FEET RQD | - | 'F10.1,/,3X, |
| O | 'AVE. INSTR. MAT. MAINT HR RQD | - | 'F10.1,/,3X, |
| P | 'AVE. NO. SUPPLIES RQD | - | 'F10.1,/,3X, |
| Q | 'AVE. NO. MISCELLANEOUS RQD | - | 'F10.1, |

WRITE ANNUAL TECHNICAL RESULTS

```

930 IF (.NOT.RPT4) GO TO 940
WRITE (6,1005) COURSE,DRATE,N,INRATE,(DIGIT(I),I=1,5),
1 (GRAD(I),I=1,5),(STUD(I),I=1,5),
2 (AOB(I),I=1,5),(PSP(I),I=1,5),
3 (RINSTR(I),I=1,5),(RADMIN(I),I=1,5),
4 (REQUIP(I),I=1,5),(PEQUIP(I),I=1,5),
5 (AEQUIP(I),I=1,5),(RFACIL(I),I=1,5),
6 (IMDMNT(I),I=1,5),(RSUPPL(I),I=1,5),
7 (RMISC(I),I=1,5)
IF (N.LE.5) GO TO 940
WRITE (6,1005) COURSE,DRATE,N,INRATE,(DIGIT(I),I=6,10),
1 (GRAD(I),I=6,10),(STUD(I),I=6,10),
2 (AOB(I),I=6,10),(PSP(I),I=6,10),
3 (RINSTR(I),I=6,10),(RADMIN(I),I=6,10),
4 (REQUIP(I),I=6,10),(PEQUIP(I),I=6,10),
5 (AEQUIP(I),I=6,10),(RFACIL(I),I=6,10),
6 (IMDMNT(I),I=6,10),(RSUPPL(I),I=6,10),
7 (RMISC(I),I=6,10)
IF (N.LE.10) GO TO 940
WRITE (6,1005) COURSE,DRATE,N,INRATE,(DIGIT(I),I=11,15),
1 (GRAD(I),I=11,15),(STUD(I),I=11,15),
2 (AOB(I),I=11,15),(PSP(I),I=11,15),
3 (RINSTR(I),I=11,15),(RADMIN(I),I=11,15),
4 (REQUIP(I),I=11,15),(PEQUIP(I),I=11,15),
5 (AEQUIP(I),I=11,15),(RFACIL(I),I=11,15),
6 (IMDMNT(I),I=11,15),(RSUPPL(I),I=11,15),
7 (RMISC(I),I=11,15)
IF (N.LE.15) GO TO 940
WRITE (6,1005) COURSE,DRATE,N,INRATE,(DIGIT(I),I=16,20),
1 (GRAD(I),I=16,20),(STUD(I),I=16,20),
2 (AOB(I),I=16,20),(PSP(I),I=16,20),
3 (RINSTR(I),I=16,20),(RADMIN(I),I=16,20),
4 (REQUIP(I),I=16,20),(PEQUIP(I),I=16,20),
5 (AEQUIP(I),I=16,20),(RFACIL(I),I=16,20),
6 (IMDMNT(I),I=16,20),(RSUPPL(I),I=16,20),
7 (RMISC(I),I=16,20)
1005 FFORMAT ('1',28X,'COURSE COST ANALYSIS',/,1X,'INPUT:',/,3X,
1 'COURSE NUMBER - ',A4,25X,'DISCOUNT RATE - ',F4.1,
2 'PERCENT',/,3X,'PLANNING PERIOD - ',I2,27X,
3 'INFLATION RATE - ',F4.1,'PERCENT',/,1X,
4 'OUTPUT TECHNICAL RESULTS:',/,32X,
5 'YEAR ',I2,' YEAR ',I2,' YEAR ',I2,' YEAR ',I2,
6 'YEAR ',I2,/,3X,
7 'NO. OF GRADUATES RQD ',5(4X,16),/,3X,
8 'NO. OF STUDENTS IN ',5(1X,F9.0),/,3X,
9 'AVERAGE ON BOARD ',5(1X,F9.0),/,3X,
A 'NO. OF STUDENT POSITIONS ',5(1X,F9.0),/,3X,
B 'NO. OF INSTRUCTORS RQD ',5(1X,F9.0),/,3X,
C 'NO. OF ADMIN PERS RQD ',5(1X,F9.0),/,3X,
D 'NO. OF EQUIPMENTS RQD ',5(1X,F9.0),/,3X,
E 'ANNUAL EQUIP PURCHASES ',5(1X,F9.0),/,3X,
F 'ANNUAL EQUIP AVAILABLE ',5(4X,16),/,3X,
G 'NO. SQUARE FEET RQD ',5(1X,F9.0),/,3X,
H 'NO. INSTR MAT MAINT HR RQD ',5(1X,F9.0),/,3X,
I 'NO. SUPPLIES RQD ',5(1X,F9.0),/,3X,
J 'NO. MISCELLANEOUS RQD ',5(1X,F9.0))

```

WRITE SUMMARY OF ANNUAL COST RESULTS

```

940 IF (.NOT.RPT5) GO TO 950
WRITE (6,1002) COURSE,DRATE,N,INRATE,NSTUD,DSTUD,ISTUD,FSTUD,
1 VTRAV,DTRAV,ITRAV,FTRAV,NINSTR,DINSTR,IINSTR,
2 FINSTR,NADMIN,DADMIN,IADMIN,FADMIN,NEQUIP,DEQUIP,

```



```

3      IEQUIP,FEQUIP,NFACIL,DFACIL,IFACIL,FFACIL,NIMD,
4      DIMD,IIMD,FIMD,NSUPPL,DSUPPL,ISUPPL,FSUPPL,NMISC,
5      DMISC,IMISC,FMISC,SNAOC,SDAOC,SIAOC,SFAOC,GNAOC,
6      GDAOC,GIAOC,GFAOC,UNAOC,UDAOC,UIAOC,UFAOC,PNAOC,
7      PDAOC,PIAOC,PFAOC
1002  FORMAT ('1',28X,'COURSE COST ANALYSIS',/,1X,'INPUT:',/,3X,
1      'COURSE NUMBER - ',A4,25X,'DISCOUNT RATE - ',F4.1,
2      'PERCENT',/,3X,'PLANNING PERIOD - ',I2,27X,
3      'INFLATION RATE - ',F4.1,'PERCENT',/,1X,
4      'OUTPUT COST RESULTS:',10X,
5      'NON-DISC DISCOUNTED NON-DISC DISCOUNTED',/,31X,
6      'CONSTANT $ CONSTANT $ CURRENT $ CURRENT $',/,3X,
7      'STUDENT SALARIES',10X,4(2X,F10.0),/,3X,
8      'STUDENT TRAVEL',12X,4(2X,F10.0),/,3X,
9      'INSTRUCTOR SALARY',9X,4(2X,F10.0),/,3X,
10     'ADMINISTRATIVE SALARY',5X,4(2X,F10.0),/,3X,
11     'EQUIPMENT',17X,4(1X,F11.0),/,3X,
12     'FACILITIES',16X,4(1X,F11.0),/,3X,
13     'INSTRUCTIONAL MATERIALS',3X,4(2X,F10.0),/,3X,
14     'SUPPLIES',18X,4(2X,F10.0),/,3X,
15     'MISCELLANEOUS',13X,4(2X,F10.0),/,3X,
16     'TOTAL OPERATIONAL',9X,4(1X,F11.0),/,3X,
17     'COST PER GRADUATE',8X,4(4X,F8.2),/,3X,
18     'COST PER STUDENT INPUT',3X,4(4X,F8.2),/,3X,
19     'COST PER STUDENT POSITION',4(4X,F8.2))

```

CC
CC
CC
WRITE ANNUAL COST RESULTS

```

950  IF (.NOT.RPT6) GO TO 960
      WRITE (6,1004) COURSE,DRATE,N,INRATE,(DIGIT(I),I=1,5),
1      (CSTUD(I),I=1,5),(CTRAV(I),I=1,5),
2      (CINSTR(I),I=1,5),(CADMIN(I),I=1,5),
3      (CEQUIP(I),I=1,5),(CFACIL(I),I=1,5),
4      (CIMDMT(I),I=1,5),(CSUPPL(I),I=1,5),
5      (CMISC(I),I=1,5),(COPTOT(I),I=1,5),
6      (CGRAD(I),I=1,5),(CSTIN(I),I=1,5),
7      (CSP(I),I=1,5)
      IF (N.LE.5) GO TO 960
      WRITE (6,1004) COURSE,DRATE,N,INRATE,(DIGIT(I),I=6,10),
1      (CSTUD(I),I=6,10),(CTRAV(I),I=6,10),
2      (CINSTR(I),I=6,10),(CADMIN(I),I=6,10),
3      (CEQUIP(I),I=6,10),(CFACIL(I),I=6,10),
4      (CIMDMT(I),I=6,10),(CSUPPL(I),I=6,10),
5      (CMISC(I),I=6,10),(COPTOT(I),I=6,10),
6      (CGRAD(I),I=6,10),(CSTIN(I),I=6,10),
7      (CSP(I),I=6,10)
      IF (N.LE.10) GO TO 960
      WRITE (6,1004) COURSE,DRATE,N,INRATE,(DIGIT(I),I=11,15),
1      (CSTUD(I),I=11,15),(CTRAV(I),I=11,15),
2      (CINSTR(I),I=11,15),(CADMIN(I),I=11,15),
3      (CEQUIP(I),I=11,15),(CFACIL(I),I=11,15),
4      (CIMDMT(I),I=11,15),(CSUPPL(I),I=11,15),
5      (CMISC(I),I=11,15),(COPTOT(I),I=11,15),
6      (CGRAD(I),I=11,15),(CSTIN(I),I=11,15),
7      (CSP(I),I=11,15)
      IF (N.LE.15) GO TO 960
      WRITE (6,1004) COURSE,DRATE,N,INRATE,(DIGIT(I),I=16,20),
1      (CSTUD(I),I=16,20),(CTRAV(I),I=16,20),
2      (CINSTR(I),I=16,20),(CADMIN(I),I=16,20),
3      (CEQUIP(I),I=16,20),(CFACIL(I),I=16,20),
4      (CIMDMT(I),I=16,20),(CSUPPL(I),I=16,20),
5      (CMISC(I),I=16,20),(COPTOT(I),I=16,20),
6      (CGRAD(I),I=16,20),(CSTIN(I),I=16,20),
7      (CSP(I),I=16,20)

```

```

1004  FORMAT ('1',28X,'COURSE COST ANALYSIS',/,1X,'INPUT:',/,3X,
1      'COURSE NUMBER - ',A4,25X,'DISCOUNT RATE - ',F4.1,
2      'PERCENT',/,3X,'PLANNING PERIOD - ',I2,27X,
3      'INFLATION RATE - ',F4.1,'PERCENT',/,1X,
4      'OUTPUT COST RESULTS: (NON-DISC CONSTANT $)',/,32X,
5      'YEAR ',I2,' YEAR ',I2,' YEAR ',I2,' YEAR ',I2,
6      'YEAR ',I2,/,3X,
7      'STUDENT SALARIES',10X,5(1X,F9.0),/,3X,
8      'STUDENT TRAVEL',12X,5(1X,F9.0),/,3X,
9      'INSTRUCTOR SALARY',9X,5(1X,F9.0),/,3X,
10     'ADMINISTRATIVE SALARY',5X,5(1X,F9.0),/,3X,
11     'EQUIPMENT',17X,5(1X,F9.0),/,3X,
12     'FACILITIES',16X,5(1X,F9.0),/,3X,
13     'INSTRUCTIONAL MATERIALS',3X,5(1X,F9.0),/,3X,

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4      'NO. SUPPLIES RQD      ,5(1X,F9.0),/,3X,
5      'NO. MISCELLANEOUS RQD ,5(1X,F9.0),/,3X,
6      'ANNUAL INVESTMENT DOLLARS ,5(1X,F9.0),/,3X,
7      'ANNUAL RECURRING CST/SAV ,5(1X,F9.0))
8      WRITE (6,1510) (DIGIT(I),I= 1, 5),
9      1      (ETAGRD(I),I= 1, 5), (ETASTU(I),I= 1, 5),
10     2      (ETAAOB(I),I= 1, 5), (ETAINS(I),I= 1, 5),
11     3      (ETAADM(I),I= 1, 5), (ETAEQP(I),I= 1, 5),
12     4      (ETAFAC(I),I= 1, 5), (ETASUP(I),I= 1, 5),
13     5      (ETAMIS(I),I= 1, 5), (ETAINV(I),I= 1, 5),
14     6      (ETAREC(I),I= 1, 5)
15     WRITE (6,1510) (DIGIT(I),I= 6,10),
16     1      (ETAGRD(I),I= 6,10), (ETASTU(I),I= 6,10),
17     2      (ETAAOB(I),I= 6,10), (ETAINS(I),I= 6,10),
18     3      (ETAADM(I),I= 6,10), (ETAEQP(I),I= 6,10),
19     4      (ETAFAC(I),I= 6,10), (ETASUP(I),I= 6,10),
20     5      (ETAMIS(I),I= 6,10), (ETAINV(I),I= 6,10),
21     6      (ETAREC(I),I= 6,10)
22     WRITE (6,1510) (DIGIT(I),I=11,15),
23     1      (ETAGRD(I),I=11,15), (ETASTU(I),I=11,15),
24     2      (ETAAOB(I),I=11,15), (ETAINS(I),I=11,15),
25     3      (ETAADM(I),I=11,15), (ETAEQP(I),I=11,15),
26     4      (ETAFAC(I),I=11,15), (ETASUP(I),I=11,15),
27     5      (ETAMIS(I),I=11,15), (ETAINV(I),I=11,15),
28     6      (ETAREC(I),I=11,15)
29     WRITE (6,1510) (DIGIT(I),I=16,20),
30     1      (ETAGRD(I),I=16,20), (ETASTU(I),I=16,20),
31     2      (ETAAOB(I),I=16,20), (ETAINS(I),I=16,20),
32     3      (ETAADM(I),I=16,20), (ETAEQP(I),I=16,20),
33     4      (ETAFAC(I),I=16,20), (ETASUP(I),I=16,20),
34     5      (ETAMIS(I),I=16,20), (ETAINV(I),I=16,20),
35     6      (ETAREC(I),I=16,20)
36     ( ***
37     IF (.NOT.LAST) GO TO 10
38     1511 CONTINUE
39     1512 STOP
40     END

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APPENDIX D

ETAM RANGE-OF-EFFECT PROGRAM DOCUMENTATION

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SECTION D.1

INTRODUCTION

The purpose of this appendix is to provide documentation for those programs that have been implemented to date in the computerization of ETAM. Broadly, this includes programs in two general support areas - those modules used to construct the data bases used by the interactive ETAM system, and the programs which implement the Range-of-Effect search and reporting process.

Neither the ETAM system, nor the environment in which the current system is implemented is of a trivial nature. The key to interpretation of a majority of this appendix presumes at least a minimal working knowledge on the part of the reader with both basic ETAM and the programming requirements of the timesharing vendor.

ORGANIZATION

This appendix is organized into six major sections. Section D.1 illustrates the logic flow of the eighteen programs implemented in the current ETAM system. A separate coverage of each of the programs is made in Section D.2. Section D.3 documents the timesharing system executive routines that are common to more than one program. The details and formats of the online files required to support the ETAM system are covered in Section D.4. Input and control data used in the makeup of the online ETAM system are documented in Section D.5. In Section D.6 appear listings of the source cards for each of the programs in the current system. In summary, the contents of this appendix are:

| | |
|-------------|----------------------------------|
| Section D.1 | Introduction |
| Section D.2 | Program Descriptions |
| Section D.3 | System Executive Routines |
| Section D.4 | Online File Formats |
| Section D.5 | Input and Control Data |
| Section D.6 | Program Listings (Service Cards) |

EQUIPMENT ENVIRONMENT

All ETAM programs are designed to run in an interactive mode on a remote time-shared computer. Timesharing services and support were obtained on a lease basis from National CSS, Inc., Norwalk, Connecticut. The National CSS VP/CSS* system is not documented within this publication. A basic knowledge of sign-on, sign-off, editing, and program execution are required of the ETAM User.

* Trademark of National CSS, Inc.

The ETAM User requires a standard remote terminal such as an IBM 2741, or a Teleterm 1030*. The terminal is connected to the timesharing vendor's computer via a dial-up telephone line and a modem. Further information on the distinct types of terminal equipments which can be employed in conjunction with the timesharing support should be obtained from National CSS, Inc.

As currently configured, the ETAM system utilizes thirty cylinders of online direct-access storage (disk storage) and all programs will function in a 256K byte partition of storage.

PROGRAM ENVIRONMENT

The implications associated with the following program documentation and VP/CSS executive sequences presupposes a working knowledge above that of the casual User with the basic services provided by the National CSS (NCSS) timesharing vendor. These services are formally documented by NCSS and are not reproduced within this manual. To assist those who are unfamiliar with the NCSS documentation, the following references are mentioned:

| <u>System Function</u> | <u>NCSS Reference</u> |
|-----------------------------------|--|
| Typing Conventions, Login, Logout | A Guide to the National CSS Computer System for Application Product Users (NCSS Form 991) Section 1 |
| System Interruptions | A Guide to the National CSS Computer System for Application Product Users (NCSS Form 991) Section 7 |
| CSS COMMANDS SUMMARY | A Guide to the National CSS Computer System for Application Product Users (NCSS Form 991) Appendix B |
| CSS File Creation and Maintenance | A Guide to the National CSS Computer System for Application Product Users (NCSS Form 991) Section 3 |
| | VP/CSS Edit Command (NCSS Form 108) |
| VP/CSS EXECUTIVE Language | VP/CSS EXECUTIVE Language (EXEC) (NCSS Form 109-5) |

* Trademark of Computer Devices, Inc.

ETAM SYSTEM INITIALIZATION

A total of eighteen programs are involved in the current ETAM system. In a broad sense, these can be divided into two distinct functional areas. Eleven programs are used in the generation and maintenance of the ETAM abbreviated data bases. The remaining seven programs implement the ETAM Range-of-Effect (ROE) search process.

Figure D.1-1 illustrates the basic initialization process that is required prior to the build of the abbreviated data bases. All files are indicated with a number; this "File Number" will be consistent throughout this appendix. The card files of Figure D.1-1 must be transmitted to the timesharing vendor's computer site and introduced to the online system via the terminal "Offline Read" process. Executive STARTUP has been designed to function with any or all of the card files indicated. This executive can be run multiple times, if required. All of the input data is sorted via executive STARTUP, and the Master Reference file (File Number 1) is set to zero by Program P18.

As indicated in Figure D.1-1, the Descriptor Master Index is created by running Program P16. All of the programs of the ETAM system are supported by a unique executive. The executive for each program bears the name "RUN" followed by the unique program name. Thus, Program P16 is executed by an invocation of Executive RUNP16.

LOAD OF THE ABBREVIATED COURSE DATA BASE

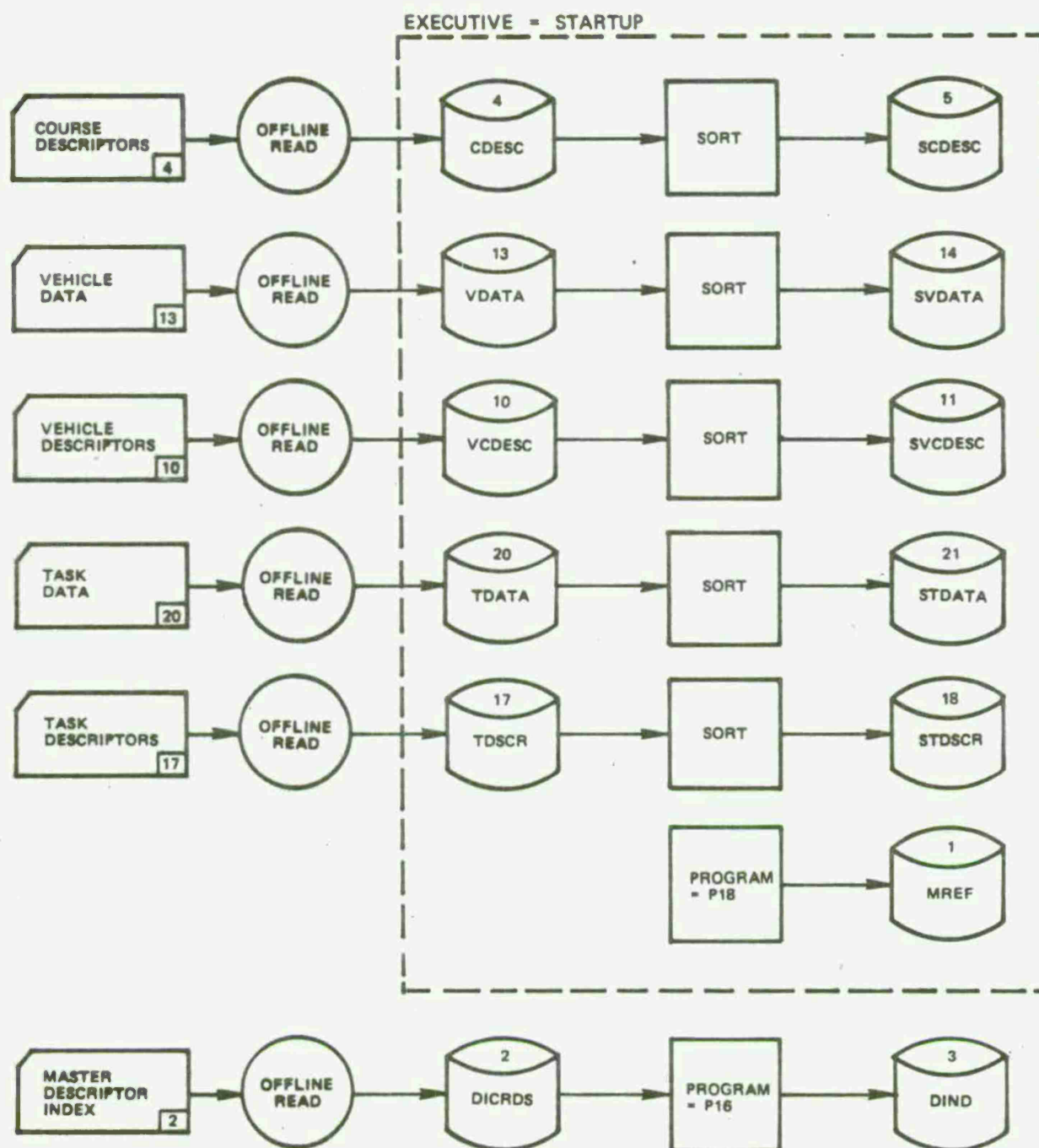
Figure D.1-2 illustrates the load of the four files of the Abbreviated Course data base. Each of the three data bases of the ETAM system (Course, Vehicle, and Task) is constructed by building a basic data file, a file directory, and a descriptor file. For the Course entity, two directories are required.

Program P14 uses the CIN (Course Identification Number) of the Course descriptor input card file as a selection criteria for obtaining Course data from the NITRAS tape. In the current implementation, descriptors have been assigned to 121 unique CIN's. The NITRAS tape contains data relative to more than 4000 Courses. The following load counts were extracted from the output of Program P14:

```

132 : Total Descriptor Cards Read
121 : Total Unique CIN's on Descriptor Cards
 50 : Total Number CIN's with No Data Match in NITRAS
111 : Total Number Course Records extracted from NITRAS
4,127 : Total Number Course Records on NITRAS Tape

```

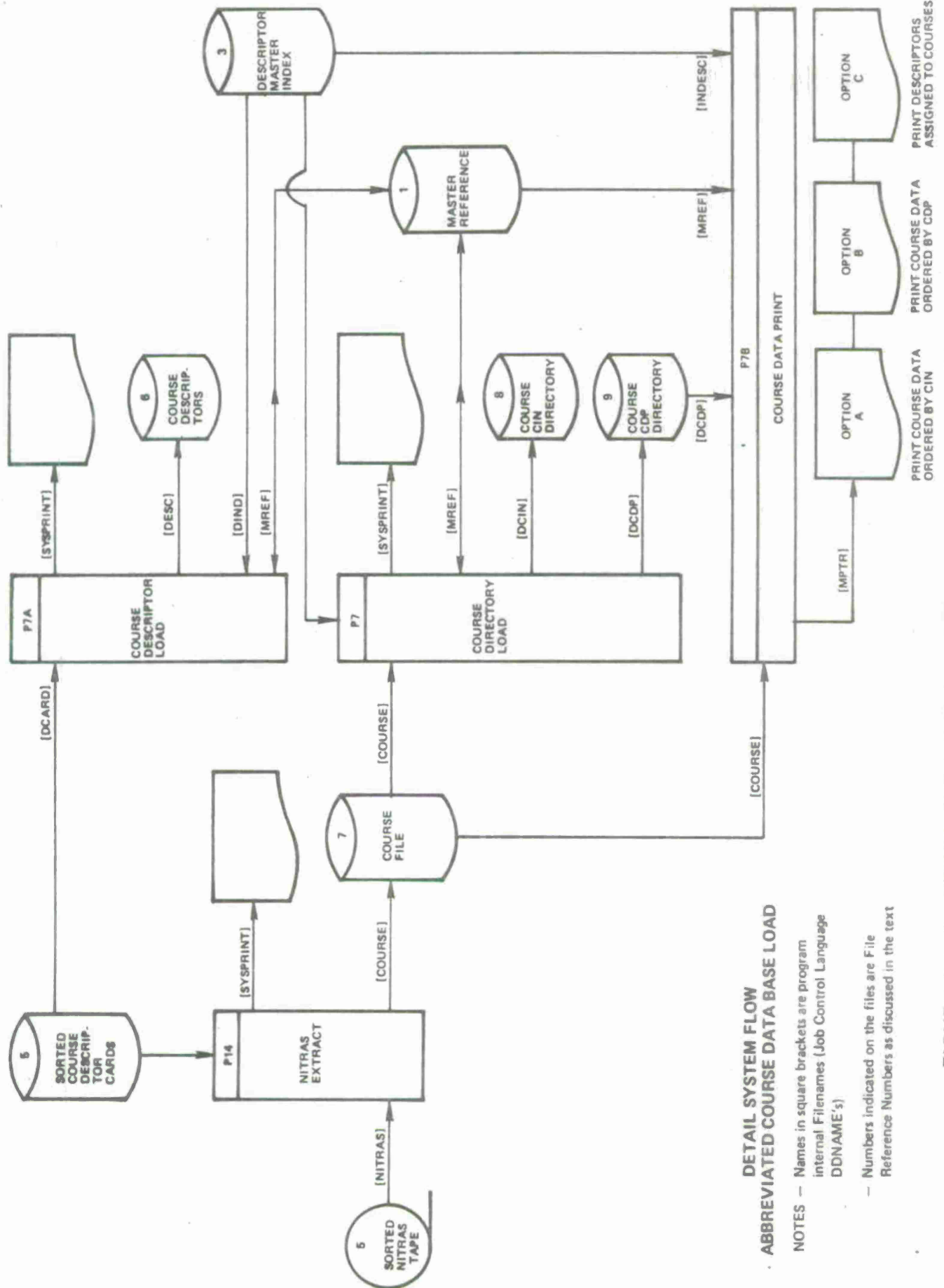



INITIALIZATION (STARTUP) OF ETAM SYSTEM DATA SETS PRIOR TO CONSTRUCTION OF THE ABBREVIATED DATA BASES

All Files shown have filename = ETAM

Names shown above are filetype; e.g., the sorted course descriptor output of Executive STARTUP is called ETAM SCDESC

FIGURE D.1-1. INITIALIZATION (STARTUP) OF ETAM SYSTEM DATA SETS PRIOR TO CONSTRUCTION OF THE ABBREVIATED DATA BASES



DETAIL SYSTEM FLOW/ ABBREVIATED COURSE DATA BASE LOAD

- NOTES — Names in square brackets are program Internal Filenames (Job Control Language DDNAME's)
- Numbers indicated on the files are File Reference Numbers as discussed in the text

FIGURE D.1-2. DETAIL SYSTEM FLOW/ ABBREVIATED COURSE DATA BASE LOAD

The two Course directories are constructed by Program P7. The Abbreviated Course data file is used as the source. A directory ordered by Course CIN and a directory ordered by Course CDP are required.

The Course descriptor card input is used by Program P7A to construct the Course descriptor file (File Number 6). This file will be the reference to be used in the ETAM Range-of-Effect search process.

Each of the programs of the data base build processes introduce counts into the Master Reference file (File Number 1). This file will be used by all programs which reference the abbreviated data bases. These files will be accessed randomly and the counts provided by the Master Reference file will be used as program internal selfchecks to prevent input/output errors.

The final program of the Course data base build process is the Course Print Program, Program P7B. This program offers interactive options to request print of the Course data base contents.

Program P20 is not shown on the diagrams of this appendix. This program's function is to print the entities of a selected data base, followed by all descriptors applicable to each entity. This program provides an interactive option to allow print of Course entities plus descriptor data.

ABBREVIATED VEHICLE DATA BASE LOAD

The load of the three files (data, directory, and descriptor) of the Vehicle data base is illustrated in Figure D.1-3. Both the data file and the descriptor file are loaded from card input as transmitted to the timesharing computer system. At present, data coverage for 63 unique Vehicle stock numbers has been provided. Record counts relative to the Vehicle data files are written into the Master Reference file by Program P9.

Printer dumps of the Abbreviated Vehicle data base contents are the output of Program P8A. Options (interactive) supporting data file print and print of the general Vehicle type descriptors are available. Program P20 (not shown on Figure D.1-3) can be used to produce a listing of all Vehicle entities and the specific descriptors applied to each.

ABBREVIATED TASKS DATA BASE LOAD

The build of the Abbreviated Tasks data base is shown in D.1-4. This is the largest of the three ETAM data bases. The current system supports 670 distinct Tasks. Both the Tasks data file and descriptor file are loaded from card input. Due to the bulk of the output for the Vehicle entity, Program P9 allows selection of the printer output device. The

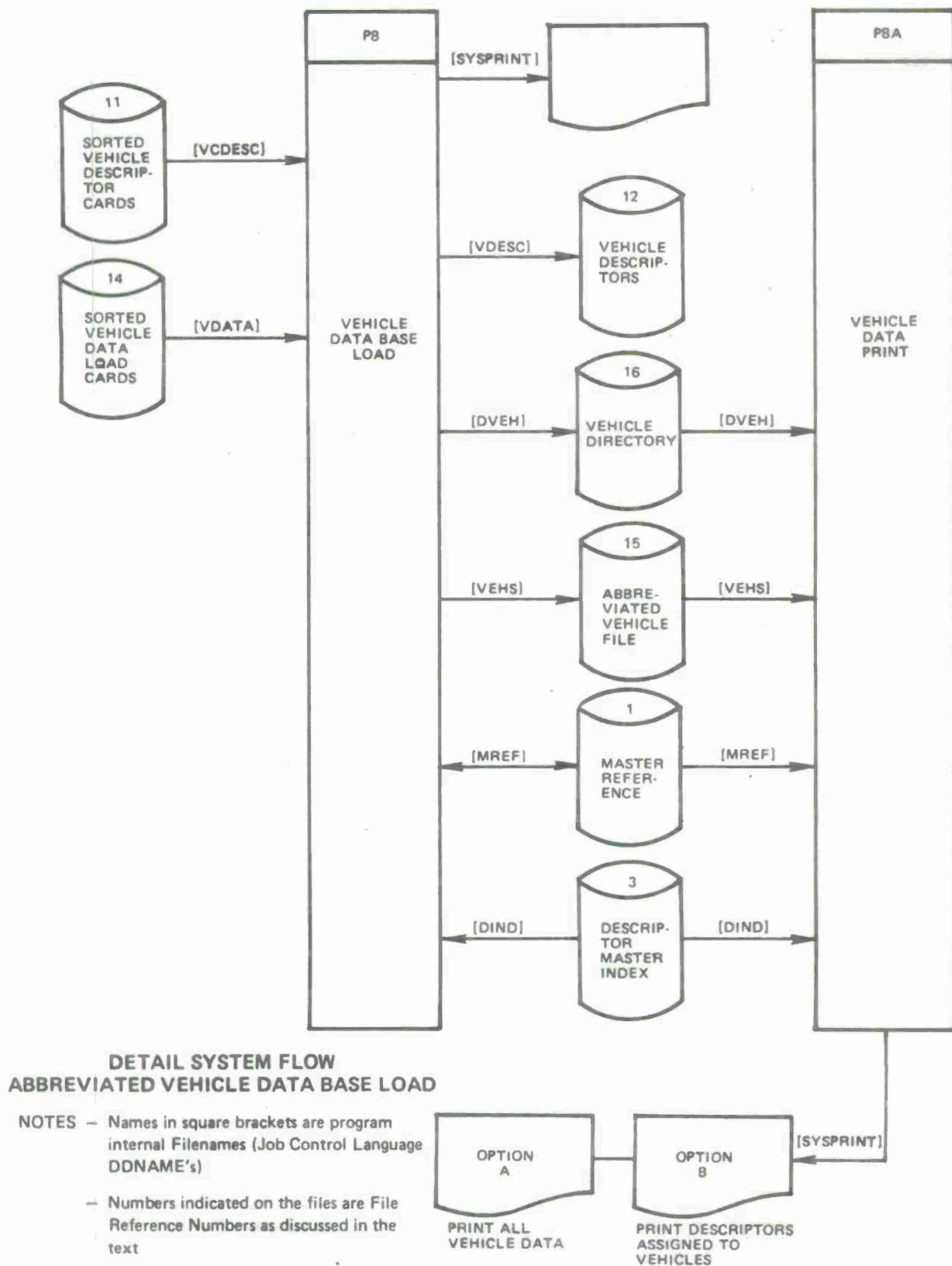


FIGURE D.1-3. DETAIL SYSTEM FLOW/ ABBREVIATED VEHICLE DATA BASE LOAD

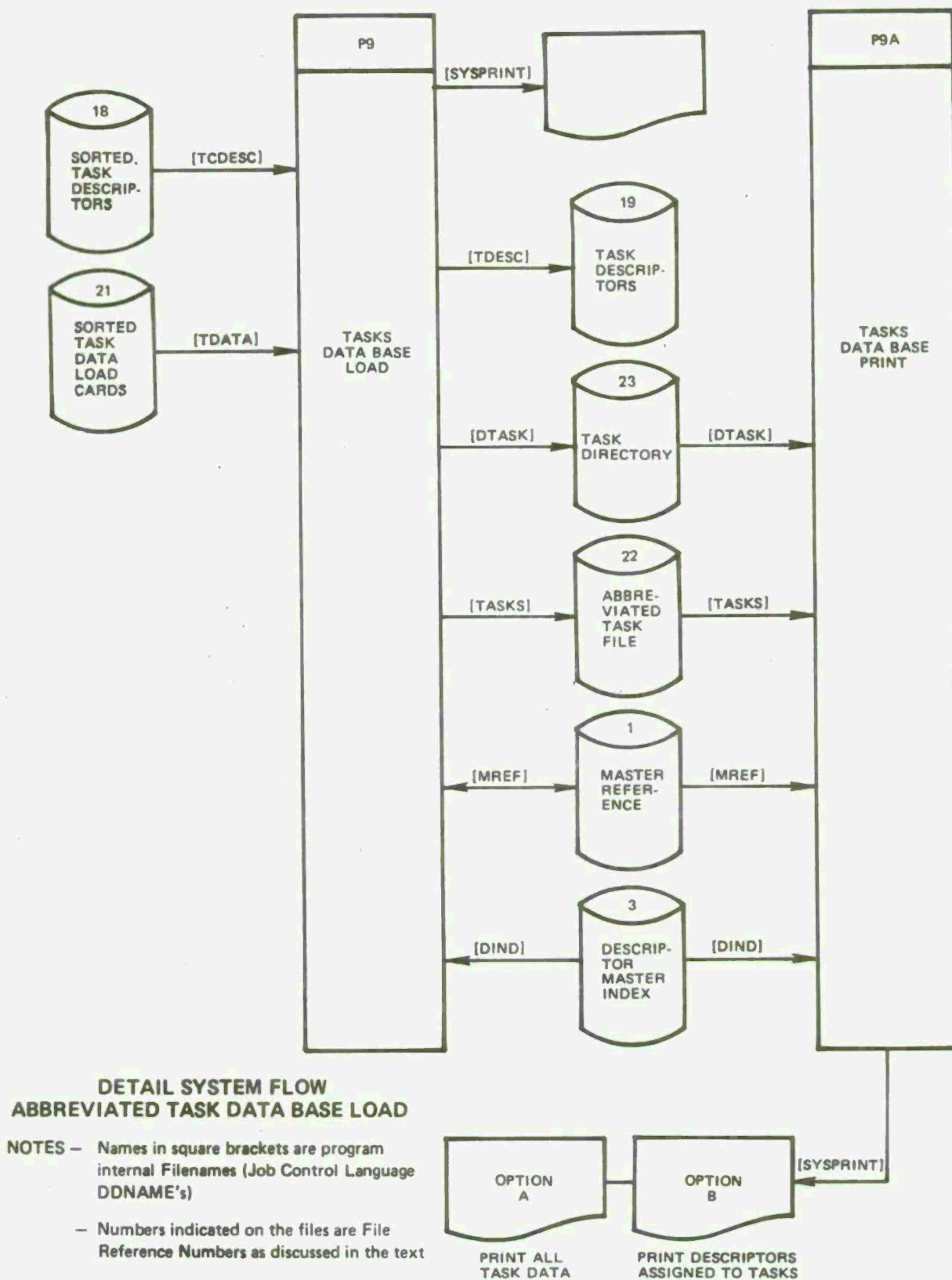


FIGURE D.1-4. DETAIL SYSTEM FLOW ABBREVIATED TASK DATA BASE LOAD

online terminal, offline printer, or both may be chosen interactively by the User. Program P9 inserts record counts from the Vehicle data base files into the Master Reference file (File Number 1).

Functioning in a manner parallel to that of Program P8A for Vehicle data, Program P9A will produce printer dumps of the contents of the Tasks data base. For a listing of Task entity and all related descriptors, Program P20 must be used.

ESTABLISHING A NEW ETAM PROJECT

All of the files generated thus far have been ETAM "System" files which are of equal utility to all ETAM Projects. The files covered from this point forward are unique to each unique ETAM project.

The first step in the introduction of a new ETAM Project to the ETAM System is accomplished by running Program P17. This is illustrated on Figure D.1-5. The four Project Data Base files of interest in the Range-of-Effect search are the ID, REC, REV, and REJ files (File Numbers 26, 27, 28, and 29). These files contain an identification of the specific project and indicate those descriptors that are to be used in the forthcoming ROE search. The other Project Data Base files that can be created via Program P17 are of textual interest only at this point.

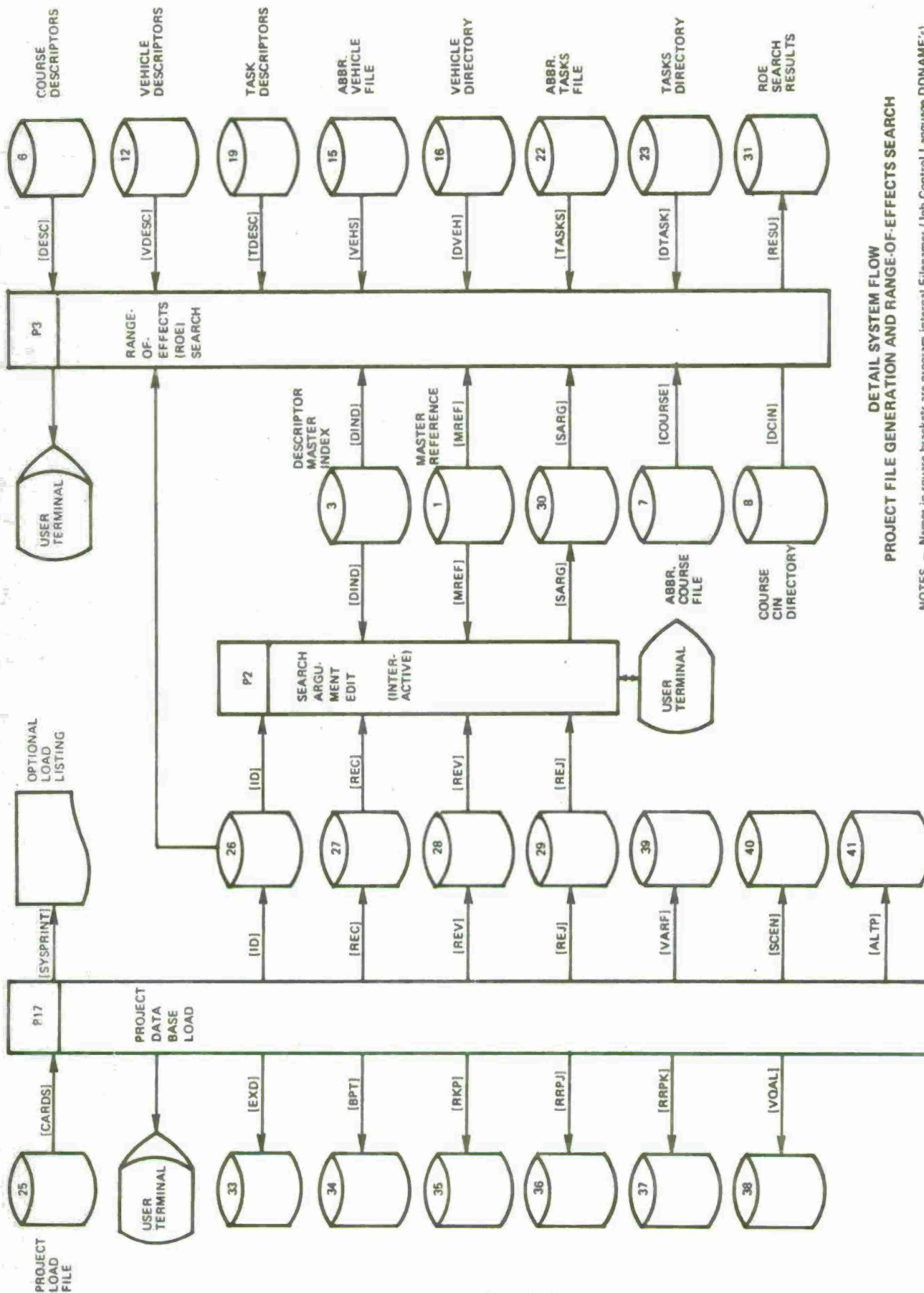
Program P1 can be used to print any/all of the Project Data Base file contents for a specific project.

EXECUTION OF THE RANGE-OF-EFFECT SEARCH

The Search Argument Edit Program P2 accomplishes the first step of the Range-of-Effect search process. The search arguments for the entities Courses, Vehicles, and Tasks are located in files REC, REV, and REJ, respectively. The User may peruse those descriptors already in the system and delete or add as is necessary. The final action of Program P2 is to copy the edited results into the search argument file (File Number 30).

File SARG (File Number 30) is generated as a result of running Program P2. As shown in Figure D.1-5, this is the only method of generating the SARG file. Since the SARG file is the prime input to the Search Program P3, it is required that Program P2 be executed prior to executing Program P3.

Program P3 accomplishes the actual search. No extensive output is directed to the terminal by Program P3. The search results are accumulated into the RESU file (File Number 31). The User is informed by terminal output as to the size (number of records selected as a result of the search) of the results file RESU. If, due to the number of records selected in the search,



DETAIL SYSTEM FLOW
PROJECT FILE GENERATION AND RANGE-OF-EFFECTS SEARCH

NOTES - Names in square brackets are program internal Filenames (Job Control Language DDNAME's)

- Numbers indicated on the files are File Reference Numbers as discussed in the text

FIGURE D.1-5. DETAIL SYSTEM FLOW/ PROJECT FILE GENERATION AND RANGE-OF-EFFECT SEARCH

the User determines that an obvious error has been made in the selection of search arguments, the argument set may be edited by re-running Program P2. A subsequent run of the search Program P3 will create a new results file.

PROCESSING OF SEARCH RESULTS

Figure D.1-6 indicates the logic flow of the three programs that are involved in the processing of the results of a Range-of-Effect search. Program P5A is used to print the results of a search; the results file RESU is used as the input to Program P5A. This program also numbers each of the records as they are printed. This is vital since the results edit program (Program P5B) requires that record numbers be entered as a part of the interactive commands.

Program P5B allows the User to add or delete records from the search results. Upon termination, Program P5B copies all original and added results into the extract search results file REE (File Number 32).

Program P5C prints the contents of the extract results file in a finished format. This listing is the conclusion of the Range-of-Effect search process.

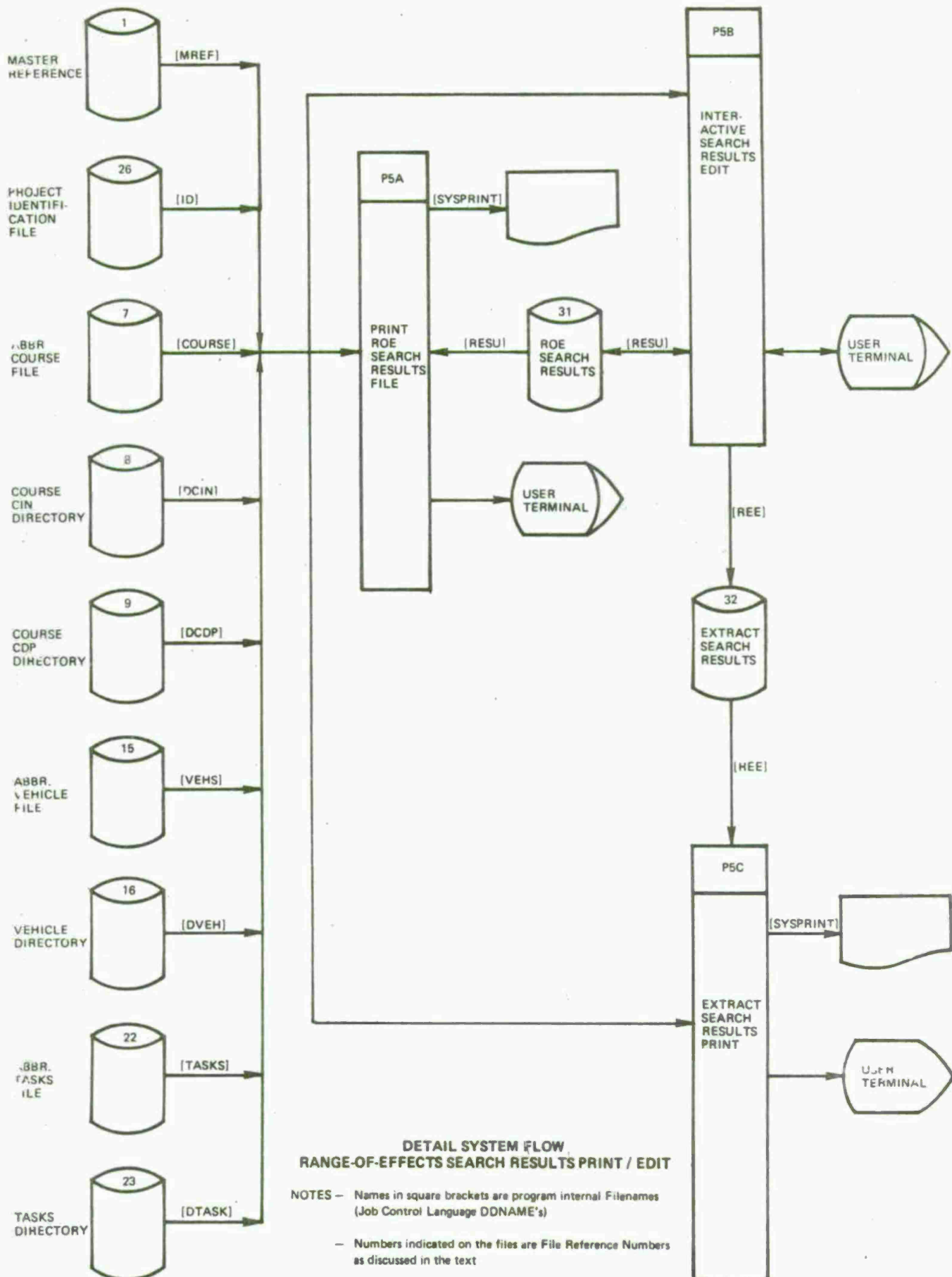


FIGURE D.1-6. DETAIL SYSTEM FLOW RANGE-OF-EFFECT SEARCH RESULTS PRINT/EDIT

SECTION D.2

PROGRAM DOCUMENTATION

In this Section are documentation packages covering each of the eighteen programs of the current ETAM system implementation. Specific information relative to each program is provided in the following general areas:

- (1) Executive support required
- (2) Itemization of all data files processed (input and output), their internal/external names and data formats
- (3) Discussion of program function
- (4) Listings of any executive routine(s) associated only with the program being covered
- (5) Specific User instructions as to the use of program features
- (6) Error messages generated and their meaning
- (7) Sample output resulting from program execution

TAEG REPORT NO. 40

PROGRAM NAME : P1

ENTRY POINT : P1

RUN EXECUTIVES(S) : RUNP1, NONAME, IFNAME, JCL, JCL2

USER OUTPUT VIA : Terminal, Offline Printer, or Both

USER PROMPTING : Internal to Program: (1) File(s) to be Printed
(2) Output Device(s) Selection

FUNCTION : Prints Contents of Any/All Project Files

| <u>Internal Filename (DDNAME)</u> | <u>Usage</u> | <u>Refer To File Reference Number</u> | <u>Media</u> | <u>External NCSS Filename/Filetype</u> | <u>Format</u> |
|---|--------------|---|--------------|--|---------------|
| SYSPRINT | OUTPUT | N/A : THIS IS THE OFFLINE PRINTER | | | FA, 121, 121 |
| ID | INPUT | 26 | DASD | Projectname/ID | F, 80, 80 |
| EXD | INPUT | 33 | DASD | Projectname/EXD | F, 80, 80 |
| BPT | INPUT | 34 | DASD | Projectname/BPT | F, 80, 80 |
| RKP | INPUT | 35 | DASD | Projectname/RKP | F, 80, 80 |
| RRPJ | INPUT | 36 | DASD | Projectname/RRPJ | F, 80, 80 |
| RRPK | INPUT | 37 | DASD | Projectname/RRPK | F, 80, 80 |
| VQAL | INPUT | 38 | DASD | Projectname/VQAL | F, 80, 80 |
| VARF | INPUT | 39 | DASD | Projectname/VARF | F, 80, 80 |
| SCEN | INPUT | 40 | DASD | Projectname/SCEN | F, 80, 80 |
| ALTP | INPUT | 41 | DASD | Projectname/ALTP | F, 80, 80 |
| REC | INPUT | 27 | DASD | Projectname/REC | F, 80, 80 |
| REV | INPUT | 28 | DASD | Projectname/REV | F, 80, 80 |
| REJ | INPUT | 29 | DASD | Projectname/REJ | F, 80, 80 |
| RESU | INPUT | 31 | DASD | Projectname/RESU | FB, 16, 800 |
| REE | INPUT | 32 | DASD | Projectname/REE | FB, 16, 800 |
| MREF | INPUT | 1 | DASD | ETAM/MREF | |

| <u>Internal Filename (DDNAME)</u> | <u>Usage</u> | <u>Refer To File Reference Number</u> | <u>Media</u> | <u>External NCSS Filename/Filetype</u> | <u>Format</u> |
|---|--------------|---|--------------|--|---------------|
| DIND | DIRECT | 3 | DASD | ETAM/DIND | |
| COURSE | DIRECT | 7 | DASD | ETAM/COURSE | |
| DCIN | INPUT | 8 | DASD | ETAM/DCIN | |
| DCDP | INPUT | 9 | DASD | ETAM/DCDP | |
| VEHS | DIRECT | 15 | DASD | ETAM/VEHS | |
| DVEH | INPUT | 16 | DASD | ETAM/DVEH | |
| TASKS | DIRECT | 22 | DASD | ETAM/TASKS | |
| DTASK | INPUT | 23 | DASD | ETAM/DTASK | |

Discussion

This program has as its function the printing of all files of the ETAM system called "Project Files". Program P1 has been designed to allow the interactive selection of any or all of the files to be printed.

Listing of EXECUTIVE =RUNP1

```

      P RUNP1 EXEC

      &TYPE OFF
      &COMMENT INTERACTIVE PROJECT FILE PRINT PROGRAM.
      &COMMENT SINGLE ENTRY PARM REQUIRED - PROJECT NAME.
      &COMMENT EXEC = DEVICE WILL PROMPT FOR OUTPUT DEVICE.
      &IF &INDEX EQ 1 &GOTO -STP1
EXEC NONAME RUNP1
-STP1 &ALPHA3 = &1
EXEC IFNAME
EXEC JCL
EXEC JCL2
FILEDEF SYSPRINT PTR RE FA LR 121 BL 121
LOAD P1 (CLEAR LIBE) PLILIB
START (BRIEF)
FILEDEF * CLEAR
&EXIT

```

Program P1 Specific User Instructions

This program processes only those files associated with a unique ETAM project within a single run. Accordingly, the name of the project must be provided by the User when invoking the RUNP1 executive. On the sample runs to follow, this is demonstrated using the ETAM project name "PN123".

Upon entry and after each processing command has been completed, the User will be prompted for entry as follows:

**** ENTER FILETYPE FOR OUTPUT, MENU, OR QUIT ****

A "MENU" selection will cause the printing of a list of filetypes and titles for output. Following the presentation, a return is made to the prompt message as above. The "QUIT" option is self-explanatory. If a valid filetype is entered, the system will then prompt for the desired output device, as follows:

OUTPUT TO GO TO TERMINAL, OFFLINE PRINTER, BOTH, OR QUIT?
ENTER TERM, PRTR, BOTH, OR QUIT

The response options are self-explanatory to this prompt.

If, instead of a specific filetype, a response of "ALL" is made to the first general prompt, above, all filetypes associated with the current project will be output. Following the "ALL" selection, the device selected for output will be used for all output. After processing an "ALL" option, return is made to the first general prompt as usual.

Program P1 Error Messages

If the response to a specific prompt is not decodeable, the following error message is output:

**** LAST ENTRY UNRECOGNIZED - TRY AGAIN ****

The above message will be followed by a return to the general prompt message that preceeded it.

In response to the prompt for output device, an unrecognized input will result in the following:

UNABLE TO DETERMINE ENTRY TYPE - TRY AGAIN

(followed by a return to allow another device selection)

In the current ETAM implementation, the following filetypes have not been fully specified:

| <u>Filetype</u> | <u>Project File</u> |
|-----------------|------------------------------------|
| EXC | Course Extract Data Base |
| EXJ | Tasks (Jobtasks) Extract Data Base |
| EXV | Vehicle Extract Data Base |
| CMR | Cost Model Results |
| TRER | Tree Results |
| FINR | Financial Results |

An attempt to print one of these filetypes will result in the following message:

** FILETYPE xxxx IS NOT YET SERVICEABLE, TRY AGAIN **

where the name of the filetype of concern replaces "xxxx" in the message.

Program P1 Sample Run Output

The following illustrates a run of Program P1 servicing the Project Files of Project "PN123".

RUNP1 PN123

PROJECT NAMED PN123 ALREADY EXISTS,
IS THIS CORRECT? (RESPOND YES OR QUIT)

YES

\$\$\$\$\$

GENERAL-PURPOSE PROJECT FILE PRINT
PROGRAM IS NOW STARTING...

** ENTER FILETYPE FOR OUTPUT, MENU, OR QUIT **

_MENU

PROJECT FILETYPES FOR OUTPUT ARE :

- ID - PROJECT DESCRIPTION
- EXD - EXTRACT DEFAULTS
- BPT - BENEFIT PATTERN
- RKP - RISK PROFILE
- RRPJ - RISK REDUCTION PROJECTS
- RRPK - RISK REDUCTION PACKAGES
- VQAL - VARIABLES QUALIFICATION
- VARF - VARIABLE REFERENCES
- SCEN - SCENARIOS
- ALTP - ALTERNATE PROJECTS
- REC - COURSES ROE SEARCH ARGUMENTS
- REV - VEHICLES ROE SEARCH ARGUMENTS
- REJ - TASKS ROE SEARCH ARGUMENTS
- RESU - ROE TOTAL SEARCH RESULTS
- REE - ROE SEARCH RESULTS

EXC - EXTRACT DB - COURSES
EXJ - EXTRACT DB - JOBTASKS
EXV - EXTRACT DB - VEHICLES
CMR - COST MODEL RESULTS
TRER - TREE RESULTS
FINR - FINANCIAL RESULTS

** ENTER FILETYPE FOR OUTPUT, MENU, OR QUIT **
_REC

OUTPUT TO GO TO TERMINAL, OFFLINE PRINTER, BOTH, OR QUIT
ENTER TERM, PRTR, BOTH, OR QUIT
_BOTH

PAGE NUMBER : 1

LISTING OF PROJECT FILE CONTENTS
PN123 / REC - COURSES ROE SEARCH ARGUMENTS

30 OPERATIONS
31 MAINTENANCE
40 EQUIPMENT & OBJECTS USED: REAL
64 PROCEDURE FOLLOWING
-80 ORIENTATION, FAMILIARIZATION
-81 TASK NOMENCLATURE, IDENTs, LOCATIONS, FACTS, RULES
82 TASK FORMATS AT CONCEPTUAL LEVEL
83 PROCEDURES AT VERBAL LEVEL ONLY
84 TASK COMPONENTS WITH GUIDANCE
85 ENTIRE JOB-TASK PROCEDURALLY AT BARELY ACCEPTABLE MASTERY
86 HIGHLY PROFICIENT IN WORK CONTEXT

A TOTAL OF 11 RECORDS ARE PRESENT
WITHIN THIS FILE

** ENTER FILETYPE FOR OUTPUT, MENU, OR QUIT **
_QUIT

PROJECT-FILE PRINT PROGRAM IS NOW TERMINATING

TAEG REPORT NO. 40

PROGRAM NAME : P2

ENTRY POINT : P2

RUN EXECUTIVES(S) : RUNP2, NONAME, IFNAME, JCL, JCL2

USER OUTPUT VIA : Terminal Only

USER PROMPTING : Internal Program Only

FUNCTION : Interactively Modify/Examine the Contents of the ROE
Search Argument Files REC, REV, and REJ
(File Reference Numbers 27, 28, and 29)

| <u>Internal Filename (DDNAME)</u> | <u>Usage</u> | <u>Refer To File Reference Number</u> | <u>Media</u> | <u>External NCSS Filename/Filetype</u> | <u>Format</u> |
|---|------------------|---|--------------|--|---------------|
| MREF | INPUT | 1 | DASD | ETAM/MREF | F, 80, 80 |
| DIND | DIRECT | 3 | DASD | ETAM/DIND | F, 80, 80 |
| SARG | OUTPUT | 30 | DASD | Projectname/SARG | F, 240, 240 |
| ID | INPUT | 26 | DASD | Projectname/ID | F, 80, 80 |
| REC | INOUT/ OUTPUT | 27 | DASD | Projectname/REC | F, 80, 80 |
| REV | INOUT/ OUTPUT | 28 | DASD | Projectname/REV | F, 80, 80 |
| REJ | INOUT/ OUTPUT | 29 | DASD | Projectname/REJ | F, 80, 80 |

Discussion

This program serves a twofold purpose:

For the User : This program allows interactive printing, adding, and deleting of descriptors to be used as search arguments in future Range-of-Effects (ROE) searches.

For the System : Program P2 creates a search argument file (File Number 30) using the descriptors supplied via Project Files REC, REV, and REJ. The ROE Search Program (Program P3) cannot be run successfully until this file has been created.

NOTE - This implies that Program P2 must be run at least one time prior to running Program P3.

Listing of EXECUTIVE = RUNP2

```

&TYPE OFF
&COMMENT INTERACTIVE EDIT OF SEARCH ARGUMENTS FROM PROJECT FILES
&COMMENT REC, REV, REJ TO THE SEARCH ARGUMENT PF = SARG.
&COMMENT SINGLE ENTRY PARM REQUIRED IS PROJECT NAME.
&COMMENT OUTPUT ONLY TO TERMINAL IN THIS SEQUENCE.
&IF &INDEX EQ 1 &GOTO -STP1
EXEC NONAME PUNP2
-STP1 &ALPHA3 = &1
EXEC IFNAME
EXEC JCL
EXEC JCL2
LOAD P2 (CLEAR LIBE) PLILIB
START (BRIEF)
FILEDEF * CLEAR
&EXIT
    
```

Program P3 Specific User Instructions

Program P2 processes only those files associated with a unique ETAM project during a single run. It is mandatory that the name of the specific project be provided by the User when invoking the RUNP2 executive. On the sample runs to follow, this is illustrated using the ETAM project name "PN123".

This program has been designed to work in an interactive manner; all User input/output is through the online terminal.

After program initialization, the following message will appear at the terminal:

** MAKE INITIAL ENTRY SELECT

The anticipated response to this prompt is the word "SELECT" followed by one of the options "COURSES", "VEHICLES", or "TASKS". This allows the User to select one of the three ETAM search entities for consideration. An illegal entry at this point (usually misspelling) will be flagged by the message:

** SELECTION ERROR - TRY AGAIN

(followed by the initial entry prompt)

A successful "SELECT" entry results in the following output:

** XXXXXXXX SEARCH DESCRIPTORS SELECTED

** YY DESCRIPTORS NOW SELECTED

where "XXXXXXX" will indicate the entity type selected, and "YY" indicates the total number of descriptor search arguments presently selected for this Project. The above is then followed by:

** MAKE NEXT ACTION REQUEST

This message is referred to in the following as the "general prompt". It follows all User entry to allow further entry. The User may, at this point, make one of the following entries:

SELECT (followed by) COURSES or VEHICLES or TASKS

ADD number

DELETE number

PRINT

FILE

QUIT

The "SELECT" entry functions in the same manner as discussed previously. The "ADD" and "DELETE" entries allow the User to modify the contents of the REC, REV, and REJ files. The "number" fields represent the descriptor numbers to be added or deleted. Once an entity type (Courses, Vehicles, or Tasks) has been selected, the "ADD", "DELETE", and "PRINT" verbs apply only to descriptors of that entity type until a new type is selected.

Selection of the "QUIT" option terminates Program P2 without permanent modification to any of the search designator (argument) files.

The "FILE" option terminates Program P2; all files to be modified are altered permanently in accordance with the interactive entry commands processed during Program P2 operation.

Program P2 Error Messages

During Program P2 initialization, the contents of the REC, REV, and REJ Project Files are input. These files were loaded previously by a run of Program P17. P17 merely loaded the files with no error diagnosis on the contents. Program P2 accomplishes error detection during their load. In the event of an invalid descriptor, the descriptor is removed from the file of its origin and the following message results:

**** ILLEGAL DESCRIPTOR - XXXX - DETECTED IN YYYYYYYY FILE ****
DESCRIPTOR WILL BE IGNORED AND REMOVED FROM THE YYYYYYYY FILE

In the above message, "XXXX" will indicate the invalid descriptor number and "YYYYYYYY" the entity type (Course, Vehicle, or Tasks).

The following general purpose message results for any entry error following the general prompt message:

**** UNIDENTIFIED ACTION REQUEST - TRY AGAIN**

An illegal descriptor number will be signified by:

**** KEYBOARD ENTRY - XXXX - CONTAINED ILLEGAL NUMERIC CHARACTER**

Selection of a descriptor number that does not apply to the selected entity type results in:

**** XXXX IS NOT A LEGAL DESCRIPTOR FOR YYYYYYYY TYPE**

The following self-explanatory message results from an illegal deletion request:

**** DESIGNATOR NUMBER XXXX HAS NOT BEEN SELECTED;
 IT CANNOT BE DELETED**

A general-purpose error message can result during Program P2 operation:

**** ERROR NUMBER XX HAS OCCURED ****

(followed by a general data-output line)

In the above, the error number "XX" has the following meaning:

01, - Error occurred during "PRINT" option processing.

02

Direct access indexing into the Master Descriptor Index file (File Number 3) failed. The second error line presents the indices of concern.

- 03 - While processing an "ADD" entry, an indexing problem arose into the same file as error number 1, above.
- 04 - This is an internal program indexing problem encountered while attempting rewrite of the descriptor search argument files ("FILE" option processing).

Program P2 Sample Run Output

The following sample illustrates a complete run of Program P2. Only the "COURSES" type descriptors are referenced in this run.

RUNP2 PN123

PROJECT NAMED PN123 ALREADY EXISTS,
IS THIS CORRECT? (RESPOND YES OR QUIT)

YES
\$\$\$

SEARCH DESCRIPTOR EDITOR RUN FOR PROJECT : PN123
3-D PROCEDURAL TRAINER

*** MAKE INITIAL ENTRY SELECT
_SELECT COURSES

*** COURSES SEARCH DESCRIPTORS SELECTED

*** 11 DESCRIPTORS NOW SELECTED

*** MAKE NEXT ACTION REQUEST
_PRINT

*** GROSS JOB CATEGORIES
30 OPERATIONS
31 MAINTENANCE

*** OBJECTIVE TASK VARIABLES AS MANIFEST IN THE TRAINING
40 EQUIPMENT & OBJECTS USED: REAL

*** TASK FUNCTIONS DOMINANT IN TRAINING
64 PROCEDURE FOLLOWING

*** STAGE OF LEARNING
-80 ORIENTATION, FAMILIARIZATION
-81 TASK NOMENCLATURE, IDENTs, LOCATIONS, FACTS, RULES
83 PROCEDURES AT VERBAL LEVEL ONLY
84 TASK COMPONENTS WITH GUIDANCE
85 ENTIRE JOB-TASK PROCEDURALLY AT BARELY ACCEPTABLE MASTERY
86 HIGHLY PROFICIENT IN WORK CONTEXT
87 UNUSUAL TASK CONDITIONS

TAEG REPORT NO. 40

*** MAKE NEXT ACTION REQUEST

DELETE 87

*** COURSES DESIGNATOR NUMBER

87 HAS BEEN DELETED

*** MAKE NEXT ACTION REQUEST

ADD 82

*** ADDED DESIGNATOR = 82 TASK FORMATS AT CONCEPTUAL LEVEL

*** TOTAL DESIGNATORS NOW SELECTED : 11

*** MAKE NEXT ACTION REQUEST

FILE

*** MODIFIED COURSES DESIGNATORS HAVE BEEN SAVED

SEARCH DESIGNATOR EDITOR NOW TERMINATING

TAEG REPORT NO. 40

PROGRAM NAME : P3

ENTRY POINT : P3

RUN EXECUTIVES(S) : RUNP3, NONAME, IFNAME, JCL, JCL2

USER OUTPUT VIA : Terminal Only

USER PROMPTING : Not Required

FUNCTION : Range-Of-Effects Search Module

| <u>Internal Filename (DDNAME)</u> | <u>Usage</u> | <u>Refer To File Reference Number</u> | <u>Media</u> | <u>External NCSS Filename/Filetype</u> | <u>Format</u> |
|---|--------------|---|--------------|--|---------------|
| MREF | INPUT | 1 | DASD | ETAM/MREF | F, 80, 80 |
| DIND | DIRECT | 3 | DASD | ETAM/DIND | F, 80, 80 |
| SARG | INPUT | 30 | DASD | Projectname/SARG | F, 240, 240 |
| RESU | OUTPUT | 31 | DASD | Projectname/RESU | FB, 16, 800 |
| ID | INPUT | 26 | DASD | Projectname/ID | F, 80, 80 |
| COURSE | DIRECT | 7 | DASD | ETAM/COURSE | F, 80, 80 |
| DCIN | INPUT | 8 | DASD | ETAM/DCIN | F, 760, 760 |
| VEHS | DIRECT | 15 | DASD | ETAM/VEHS | F, 80, 80 |
| DVEH | INPUT | 16 | DASD | ETAM/DVEH | F, 750, 750 |
| TASKS | DIRECT | 22 | DASD | ETAM/TASKS | F, 80, 80 |
| DTASK | INPUT | 23 | DASD | ETAM/DTASK | F, 1500, 1500 |
| DESC | INPUT | 6 | DASD | ETAM/DESC | F, 213, 213 |
| VDESC | INPUT | 12 | DASD | ETAM/VDESC | F, 213, 213 |
| TDESC | INPUT | 19 | DASD | ETAM/TDESC | F, 213, 213 |

Discussion

The Range-of-Effects search process is accomplished within Program P3. The descriptor search arguments are input via File Number 30. As mentioned in the section covering Program P2, File Number 30 is created only through a successful execution of Program P2.

Only synopsis type output is directed to the online terminal as a result of executing Program P3. The search results output is passed via filetype Program P3. The search results output is passed via filetype RESU (File Number 31) to the Programs P5A, P5B, and P5C for output editing and processing.

Listing of EXECUTIVE = RUNP3

```

&TYPE OFF
&COMMENT RANGE-OF-EFFECT (ROE) SEARCH EXECUTION.
&COMMENT SINGLE ENTRY PARM REQUIRED IS PROJECT NAME.
&COMMENT OUTPUT ONLY TO TERMINAL IN THIS SEQUENCE.
&IF &INDEX EQ 1 &GOTO -STP1
EXEC NONAME RUNP3
-STP1 &ALPHA3 = &1
EXEC IFNAME
EXEC IJCL
EXEC IJCL2
LOAD P3 (CLEAR LIBE) PLILIB
START (BRIEF)
FILEDEF :: CLEAR
GEXIT

```

Program P3 Specific User Instructions

The Project Files to be referenced by Program P3 in a single unique run can only be the files associated with a single ETAM project. The name of the desired project must be supplied by the User when invoking the RUNP3 executive. On the sample terminal outputs shown below, the project being referenced is "PN123".

Only the project name must be supplied by the User when initiating a Program P3 run. As mentioned above, Program P3 cannot be run until Program P2 has been successfully run at least one time.

Program P3 Error Messages

The following general error text can be output from Program P3:

**** ERROR NUMBER XX HAS OCCURED ****

(followed by a general data-output line)

where the error number "XX" in the above message has the following significance. All are internal program indexing errors.

- 01 - Indexing error in handling categories within the Master Descriptor Index file (File Number 3).
- 02 - Total number of input search descriptors exceeds 99. Note that no descriptor is greater than a two-digit number.
- 03 - More than 15 categories of descriptors found for a single entity within the Master Descriptor Index.
- 04 - Attempted to access a record in the Abbreviated Course file (File Number 7) beyond the bounds of the file.
- 05 - Same error type as type 04, except for the Abbreviated Vehicle file (File Number 15).
- 06 - Same error type as type 04, except for the Abbreviated Tasks file (File Number 22).

Program P3 Sample Run Output

The following reflects a complete run of Program P3 against the sample project "PN123".

RUNP3 PN123

PROJECT NAMED PN123 ALREADY EXISTS,
IS THIS CORRECT? (RESPOND YES OR QUIT)

YES

\$\$\$

RANGE-OF-EFFECTS (ROE) SEARCH PROGRAM IS STARTING

RANGE-OF-EFFECTS SEARCH FOR PROJECT : PN123
3-D PROCEDURAL TRAINER

*** NOW PROCESSING COURSES SEARCH - 11 DESCRIPTORS SELECTED

| | |
|---|-----|
| TOTAL NUMBER DESCRIPTOR RECORDS EXAMINED : | 122 |
| TOTAL RECORDS SELECTED WITH MATCHING DATA : | 37 |
| TOTAL RECORDS SELECTED WITHOUT ABBREVIATED DATA : | 24 |
| ACCUMULATED SEARCH OUTPUT RECORDS, THUS FAR : | 61 |

TAEG REPORT NO. 40

*** NOW PROCESSING VEHICLES SEARCH - 1 DESCRIPTORS SELECTED
*** NO SEARCH DESCRIPTORS SPECIFIED FOR VEHICLES TYPE DATA - SEARCH IS BYPASSED
*** NOW PROCESSING TASKS SEARCH - 1 DESCRIPTORS SELECTED
*** NO SEARCH DESCRIPTORS SPECIFIED FOR TASKS TYPE DATA - SEARCH IS BYPASSED
*** DESIGNATOR SEARCH PROGRAM IS TERMINATING
TOTAL ACCUMULATED SEARCH OUTPUT RECORDS : 61

TAEG REPORT NO. 40

PROGRAM NAME : P5A

ENTRY POINT : IHECMS (Execution Parameter Supplied by Executive
Up on Entry)

RUN EXECUTIVES(S) : RUNP5A, NONAME, IFNAME, DEVICE, JCL, JCL2

USER OUTPUT VIA : Terminal, Offline Printer, or Both

USER PROMPTING : External Executive - Output Device Select

FUNCTION : Print Results of Range-Of-Effects Search

| <u>Internal Filename (DDNAME)</u> | <u>Usage</u> | <u>Refer To File Reference Number</u> | <u>Media</u> | <u>External NCSS Filename/Filetype</u> | <u>Format</u> |
|---|--------------|---|--------------|--|---------------|
| ID | INPUT | 26 | DASD | Projectname/ID | F, 80, 80 |
| RESU | INPUT | 31 | DASD | Projectname/RESU | FB, 16, 800 |
| MREF | INPUT | 1 | DASD | ETAM/MREF | F, 80, 80 |
| COURSE | DIRECT | 7 | DASD | ETAM/COURSE | F, 80, 80 |
| DCIN | INPUT | 8 | DASD | ETAM/DCIN | F, 760, 760 |
| DCDP | INPUT | 9 | DASD | ETAM/DCDP | F, 1200, 1200 |
| VEHS | DIRECT | 15 | DASD | ETAM/VEHS | F, 80, 80 |
| DVEH | INPUT | 16 | DASD | ETAM/DVEH | F, 750, 750 |
| TASKS | DIRECT | 22 | DASD | ETAM/TASKS | F, 80, 80 |
| DTASK | INPUT | 23 | DASD | ETAM/DTASK | F, 1500, 1500 |
| SYSPRINT | OUTPUT | N/A : THIS IS THE OFFLINE PRINTER | | | FA, 121, 121 |

Discussion

The direct results of the Range-of-Effects search (Program P3) are printed by this program.

Listing of EXECUTIVE = RUNP5A

```

&TYPE OFF
&COMMENT ROE PAW SEARCH RESULTS PRINTED HEREIN.
&COMMENT SINGLE ENTRY PARM REQUIRED - PROJECT NAME
&COMMENT EXEC = DEVICE WILL PROMPT FOR OUTPUT DEVICE
&IF &INDEX EQ 1 &GOTO -STP1
EXEC NONAME RUNP5A
-STP1 &ALPHA3 = &1
EXEC IFNAME
    &SPACE
EXEC DEVICE
    &SPACE
EXEC JCL
EXEC JCL2
FILEDEF SYSPRINT PTR RE FA LR 121 BL 121
LOAD P5A (CLEAR LIBE) PLILIB
START IHECMS &ALPHA1 (BRIEF)
FILEDEF * CLEAR
&EXIT

```

Program P5A Specific User Instructions

A single run of Program P5A processes only those Project Files associated with a single unique project. The name of the project of concern must be provided by the User when invoking the RUNP5A executive. In the sample output provided below, this is illustrated by reference to project "PN123".

The Range-of-Effects search program (Program P3) provides no direct output, only summary information. This program (Program P5A) produces an itemized listing of the search results using the RESU (File Number 31) as input.

The output records are numbered. These numbers will provide reference for any editing activity that might follow by running Program P5B.

Program P5A Error Messages

None generated.

Program P5A Sample Run Output

The following reflects a complete run of Program P5A, using the sample project name "PN123".

RUNP5A PN123

PROJECT NAMED PN123 ALREADY EXISTS,
IS THIS CORRECT? (RESPOND YES OR QUIT)

YES

OUTPUT TO GO TO TERMINAL, OFFLINE PRINTER, BOTH, OR QUIT?
ENTER TERM, PRTR, BOTH, OR QUIT
BOTH

EXECUTION:

*** INITIAL SEARCH RESULTS FOR PROJECT -PN123 ***
3-D PROCEDURAL TRAINER

PAGE NUMBER : 1

RANGE-OF-EFFECTS RESULTS FOR : COURSES

```

1 A10200060 NOTE - NO MATCHING NITRAS DATA AVAILABLE FOR THIS CIN
2 A10200093 NOTE - NO MATCHING NITRAS DATA AVAILABLE FOR THIS CIN
3 A10200095 NOTE - NO MATCHING NITRAS DATA AVAILABLE FOR THIS CIN
4 A19300050 2213 INERT NAV PRINC
5 A24200010 6529 IS A
6 A41200010 6078 EA-A
7 A41200010 6287 EA A
8 A43100011 1035 EOD BASIC NAVY
9 A43100014 1036 EOD REFR NAVY
10 A43300019 2040 MASTER DIVQUAL
11 A43300025 2002 DIVER FIRST
12 A49100014 2046 RADIUM REMOV OPS
13 A55100019 0133 CAR HAND BAS
14 A55100027 3931 UNREP MECH/HYD
15 A55100068 0134 FORK LIFT OPER
16 A58000016 6053 CTO A
17 A65100020 5399 1200 PSI BT
18 A65200050 5224 OX GENR GL160P
19 A65200060 463E SOLAR GAS TURBIN
  
```

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20 A6700011 3078 WATCH REPAIR
 21 A7010027 337M WELD/HPRES PIPE
 22 A7200013 466Z UT-J
 23 B3030051 NOTE - NO MATCHING NITRAS DATA AVAILABLE FOR THIS CIN
 24 C 003722 2887 TA4JF FAM PILOTS
 25 C 003722 9007 TA4JF FAM PILOTS
 26 C 003722 9009 TA4JF FAM PILOTS
 27 C 003722 9010 TA4JF FAM PILOTS
 28 C 003722 9738 TA4JF FAM PILOTS
 29 C 2C3352 2576 UH1N A/C FAM/P/
 30 C1003834 7529 AAS18 INT MAI
 31 C1023793 7914 A7AB ATT HEADING
 32 C1023793 7915 A7AB ATT HEADING
 33 C1213011 346L AWM23 RADIO FREQ
 34 C1213011 544L AWM23 RADIO FREQ
 35 C6003472 340C E2C WEA SYS FAM
 36 C6023536 341D 54H6077 PROP INT
 37 C6463103 7365 CVA/CV ALW SUPV
 38 D 2C0011 NOTE - NO MATCHING NITRAS DATA AVAILABLE FOR THIS CIN
 39 E 2A1001 NOTE - NO MATCHING NITRAS DATA AVAILABLE FOR THIS CIN
 40 E 2A1301 NOTE - NO MATCHING NITRAS DATA AVAILABLE FOR THIS CIN
 41 E 2A1803 NOTE - NO MATCHING NITRAS DATA AVAILABLE FOR THIS CIN
 42 E 2C0901 NOTE - NO MATCHING NITRAS DATA AVAILABLE FOR THIS CIN
 43 E 2D0016 NOTE - NO MATCHING NITRAS DATA AVAILABLE FOR THIS CIN
 44 E 2D0075 NOTE - NO MATCHING NITRAS DATA AVAILABLE FOR THIS CIN
 45 E6010210 NOTE - NO MATCHING NITRAS DATA AVAILABLE FOR THIS CIN
 46 E6461641 NOTE - NO MATCHING NITRAS DATA AVAILABLE FOR THIS CIN
 47 F7000010 NOTE - NO MATCHING NITRAS DATA AVAILABLE FOR THIS CIN
 48 H 2E3710 NOTE - NO MATCHING NITRAS DATA AVAILABLE FOR THIS CIN
 49 J1300645 NOTE - NO MATCHING NITRAS DATA AVAILABLE FOR THIS CIN
 50 J2210357 538Q MULTI-THREAT TNG
 51 J2330203 2637 ADV EW OP'S CRSE
 52 J2430974 2181 IPC
 53 J8000433 NOTE - NO MATCHING NITRAS DATA AVAILABLE FOR THIS CIN
 54 K2330066 205Y SUB EW OP-ADV
 55 L1010024 NOTE - NO MATCHING NITRAS DATA AVAILABLE FOR THIS CIN

PAGE NUMBER : 2

RANGE-OF-EFFECTS RESULTS FOR : COURSES

56 L6610056 NOTE - NO MATCHING NITRAS DATA AVAILABLE FOR THIS CIN
 57 M198100E NOTE - NO MATCHING NITRAS DATA AVAILABLE FOR THIS CIN
 58 N7010320 NOTE - NO MATCHING NITRAS DATA AVAILABLE FOR THIS CIN
 59 Q 2C0015 NOTE - NO MATCHING NITRAS DATA AVAILABLE FOR THIS CIN
 60 83000010 NOTE - NO MATCHING NITRAS DATA AVAILABLE FOR THIS CIN
 61 83000012 NOTE - NO MATCHING NITRAS DATA AVAILABLE FOR THIS CIN

TAEG REPORT NO. 40

*** RESULTS FILE NOW AT END-OF-FILE ***

| | |
|---|----|
| TOTAL NUMBER COURSE RECORDS PROCESSED : | 61 |
| TOTAL NUMBER VEHICLE RECORDS PROCESSED : | 0 |
| TOTAL NUMBER JOBTASK RECORDS PROCESSED : | 0 |
| TOTAL NUMBER ROE RESULT RECORDS READ : | 61 |
| RECORDS WITHOUT MATCHING ABBREVIATED DATA : | 24 |
| TOTAL NUMBER DIRECTORY SEARCH FAILURES : | 0 |

PROGRAM NAME : P5B

ENTRY POINT :

RUN EXECUTIVES(S) : RUNP5B, NONAME, IFNAME, JCL, JCL2

USER OUTPUT VIA : Terminal Only

USER PROMPTING : Internal Program Only

FUNCTION : Interactive Edit of Range-Of-Effects (ROE) Results

| <u>Internal Filename (DDNAME)</u> | <u>Usage</u> | <u>Refer To File Reference Number</u> | <u>Media</u> | <u>External NCSS Filename/Filetype</u> | <u>Format</u> |
|---|------------------|---|--------------|--|---------------|
| ID | INPUT | 26 | DASD | Projectname/ID | F, 80, 80 |
| REE | OUTPUT | 32 | DASD | Projectname/REE | FB, 16, 800 |
| RESU | INPUT/ OUTPUT | 31 | DASD | Projectname/RESU | FB, 16, 800 |
| MREF | INPUT | 1 | DASD | ETAM/MREF | F, 80, 80 |
| COURSE | DIRECT | 7 | DASD | ETAM/COURSE | F, 80, 80 |
| DCIN | INPUT | 8 | DASD | ETAM/DCIN | F, 760, 760 |
| DCDP | INPUT | 9 | DASD | ETAM/DCDP | F, 1200, 1200 |
| TASKS | DIRECT | 22 | DASD | ETAM/TASKS | F, 80, 80 |
| DTASK | INPUT | 23 | DASD | ETAM/DTASK | F, 1500, 1500 |
| VEHS | DIRECT | 15 | DASD | ETAM/VEHS | F, 80, 80 |
| DVEH | INPUT | 16 | DASD | ETAM/DVEH | F, 750, 750 |

Discussion

This program allows the User to peruse and edit the results of a previous Range-of-Effects search. In this regard:

- Program P3 is the search routine. This module creates the un-edited results file RESU (File Number 31).
- Program P5A prints the RESU file and numbers the records therein. These record numbers are required for reference in the operation of Program P5B.

Program P5B modifies the search results RESU as desired by the User. A modified file, containing only original search results and added records is created by this program; this is the REE file (File Number 32).

Listing of EXECUTIVE = RUNP5B

```

&TYPE OFF
&COMMENT INTERACTIVE EDIT OF THE ROE SEARCH RESULTS.
&COMMENT SINGLE ENTRY PARM REQUIRED IS PROJECT NAME.
&COMMENT OUTPUT ONLY TO TERMINAL IN THIS SEQUENCE.
&IF &INDEX EQ 1 &GOTO -STP1
EXEC NONAME RUNP5B
-STP1 &ALPHA3 = &1
EXEC IFNAME
EXEC JCL
EXEC JCL2
LOAD P5B (CLEAR LIBE) PLILIB
START (BRIEF)
FILEDEF * CLEAR
&EXIT

```

Program P5B Specific User Instructions

Program P5B processes only those files associated with a unique ETAM project during a single run. It is mandatory that the name of the Specific project be provided by the User when invoking the RUNP5B executive. On the sample runs to follow, this is illustrated using the ETAM project name "PN123".

After initialization, Program P5B returns to the following general prompt message:

**** MAKE NEXT ACTION REQUEST**

This invitation for entry can be followed by one of the following entries:

```

DELETE  n1
DELETE  n1  n2
PRINT   n1
PRINT   n1  n2
ADDC    /cin/cdp/
ADDV    /stocknumber/
ADDT    /rate/rank/jobtask/
QUIT

```

The "DELETE" entries allow deletion of one or a range of entities in the search results file. The numbers "n1", "n2" refer to the numbered records in the printer listing of the search results as provided by Program P5A.

The "PRINT" commands provide a printed output of the record(s) indicated.

To add an entity not currently in the search results, the "ADDC", "ADDV", and "ADDT" entries are used for adding a Course, Vehicle, or Task, respectively. The Vehicle "stocknumber" must be present for an "ADDV" entry. For an "ADDC" entry, only the "cin" portion is required. When only "cin" is provided, all Courses bearing that "cin" designation will be selected from the Abbreviated Course data base. For the "ADDT" entry, only a single field is required. To match entries in the Abbreviated Tasks data base, all three must be provided.

The "QUIT" option rewrites the RESU file (File Number 31) with all entries - original, deleted, new (added). When printing the RESU file using Program P1, the status of each entry will be indicated. The Extract Results file (File Number 32) is composed by Program P5B. Only original and added entities are copied into this file.

Program P5B Error Messages

The following error text results from an illegal response to the general prompt message:

**** CANNOT DECODE LAST ENTRY - TRY AGAIN**

(followed by the general prompt message)

Sufficient internal table space has been reserved within Program P5B to allow a total of 500 new entity additions. Should an attempt be made to add more than this total, the following results:

**** A TOTAL OF 500 NEW RECORDS HAVE BEEN ADDED
ANOTHER RUN OF THIS ROUTINE MUST BE MADE TO
ENTER FURTHER ADDITIONS.**

At this point, if the "QUIT" option is elected, the Program will rewrite the results files and terminate. A second invocation of Program P5B will then allow 500 more additions to be made.

When entering record numbers in conjunction with the "DELETE" and "PRINT" options, two errors can occur. One is the addressing of a record that is beyond the limits of the results file RESU. A second error can occur when using a range-type entry, e.g., DELETE n1 n2. If n1 is greater in value than n2, or either is outside the bounds of the RESU file, the following common message results:

**** RANGE ERROR IN RECORD NUMBER**

Program P5B Sample Run Output

The following terminal output sample illustrates the common entries in the use of Program P5B.

RUNP5B PN123

PROJECT NAMED PN123 ALREADY EXISTS,
IS THIS CORRECT? (RESPOND YES OR QUIT)

YES
\$\$\$\$

*** ROE SEARCH RESULTS EDIT FOR PROJECT PN123 ***
3-D PROCEDURAL TRAINER

*** 61 HAVE BEEN LOADED INTO MEMORY FOR EDITING

*** MAKE NEXT ACTION REQUEST

_DELETE 1 3
DELETED RECORD NUMBER : 1 THRU 3

*** MAKE NEXT ACTION REQUEST

_DELETE 23
DELETED RECORD NUMBER : 23

*** MAKE NEXT ACTION REQUEST

_DELETE 38 49
DELETED RECORD NUMBER : 38 THRU 49

*** MAKE NEXT ACTION REQUEST

_DELETE 53
DELETED RECORD NUMBER : 53

*** MAKE NEXT ACTION REQUEST

_DELETE 55
DELETED RECORD NUMBER : 55

*** MAKE NEXT ACTION REQUEST

_ADDC /A1010108/

THE FOLLOWING RECORD(S) HAS/HAVE BEEN ADDED...

RECNO/CIN/CDP/COURSE : 62/A10101087654/ WRA-4 CMB MA

TAEG REPORT NO. 40

*** MAKE NEXT ACTION REQUEST
_PRINT 1 61

| | | |
|-----------------------|------------------|----------------------|
| RECNO/CIN/CDP/TITLE : | 1/A1020060/ | / (NO MATCHING DATA) |
| RECNO/CIN/CDP/TITLE : | 2/A1020093/ | / (NO MATCHING DATA) |
| RECNO/CIN/CDP/TITLE : | 3/A1020095/ | / (NO MATCHING DATA) |
| RECNO/CIN/CDP/TITLE : | 4/A1930050/2213/ | INERT NAV PRINC |
| RECNO/CIN/CDP/TITLE : | 5/A2420010/6529/ | IS A |
| RECNO/CIN/CDP/TITLE : | 6/A4120010/6078/ | EA-A |
| RECNO/CIN/CDP/TITLE : | 7/A4120010/6287/ | EA A |

... Output interrupted at this point ...

| | | |
|-----------------------|--------------|----------------------|
| RECNO/CIN/CDP/TITLE : | 58/N7010320/ | / (NO MATCHING DATA) |
| RECNO/CIN/CDP/TITLE : | 59/Q 2C0015/ | / (NO MATCHING DATA) |
| RECNO/CIN/CDP/TITLE : | 60/83000010/ | / (NO MATCHING DATA) |
| RECNO/CIN/CDP/TITLE : | 61/83000012/ | / (NO MATCHING DATA) |

*** MAKE NEXT ACTION REQUEST
_QUIT

*** ROE SEARCH RESULTS EDITOR IS TERMINATING

TOTAL RECORDS ADDED : 1

TOTAL RECORDS IN PROJECT EXTRACT FILE : 44

TAEG REPORT NO. 40

PROGRAM NAME : P5C

ENTRY POINT : IHECMS (Runtime Parameter Supplied by Executive Upon Entry)

RUN EXECUTIVES(S) : RUNP5C, NONAME, IFNAME, DEVICE, JCL, JCL2, SORT5C

USER OUTPUT VIA : Terminal, Offline Printer, or Both

USER PROMPTING : At Executive Level : Output Device Select

FUNCTION : Print Edited Results of Range-of-Effects (ROE) Search

| <u>Internal Filename (DDNAME)</u> | <u>Usage</u> | <u>Refer To File Reference Number</u> | <u>Media</u> | <u>External NCSS Filename/Filetype</u> | <u>Format</u> |
|---|--------------|---|--------------|--|---------------|
| SYSPRINT | OUTPUT | N/A : THIS IS THE OFFLINE PRINTER | | | F, 121, 121 |
| REE | INPUT | 32 | DASD | Projectname/REE | FB, 16, 800 |
| ID | INPUT | 26 | DASD | Projectname/ID | F, 80, 80 |
| MREF | INPUT | 1 | DASD | ETAM/MREF | F, 80, 80 |
| COURSE | DIRECT | 7 | DASD | ETAM/COURSE | F, 80, 80 |
| DCIN | INPUT | 8 | DASD | ETAM/DCIN | F, 760, 760 |
| DCDP | INPUT | 9 | DASD | ETAM/DCDP | F, 1200, 1200 |
| VEHS | DIRECT | 15 | DASD | ETAM/VEHS | F, 80, 80 |
| DVEH | INPUT | 16 | DASD | ETAM/DVEH | F, 750, 750 |
| TASKS | DIRECT | 22 | DASD | ETAM/TASKS | F, 80, 80 |
| DTASK | INPUT | 23 | DASD | ETAM/DTASK | F, 1500, 1500 |

Discussion

Program P5C is the last step in the Range-of-Effects (ROE) search process. The edited results of a search are sorted and printed. The record sort is executed at the executive level in executive SORT5C.

Listing of EXECUTIVE = RUNP5C

```

&TYPE OFF
&COMMENT ROE EXTRACT SEARCH RESULTS PRINTED HEREIN.
&COMMENT SINGLE ENTRY PARM REQUIRED - PROJECT NAME
&COMMENT EXEC = DEVICE WILL PROMPT FOR OUTPUT DEVICE
&IF &INDEX EQ 1 &GOTO -STP1
EXEC NONAME RUNP5C
-STP1 &ALPHA3 = &1
EXEC IFNAME
&SPACE
EXEC DEVICE
&SPACE
EXEC JCL
EXEC JCL2
EXEC SORT5C
FILEDEF SYSPRINT PTR RE FA LP 121 BL 121
LOADMOD P5C
START IHECMS &ALPHA1 (BRIEF)
FILEDEF :: CLEAR
&EXIT

```

Listing of EXECUTIVE = SORT5C

```

&TYPE OFF
&COMMENT SORT SUPPORT FOR ROE RESULTS FN/REE PROJECT FILE.
&COMMENT NO EXPLICIT ENTRY PARMS REQUIRED FOR THIS EXEC.
&COMMENT ALPHA3 GLOBAL CONTAINS PROJECT FILENAME ON ENTRY.
&DSN = . !! &ALPHA3
STATE &DSN REE P
&IF &INDEX# NE # &GOTO -STPS1
ERASE &DSN REE P
-STPS1 STATE &ALPHA3 REE P
&IF &INDEX# EQ # &GOTO -STPS2
&SPACE
&PRINT PROJECT FILE &ALPHA3 / REE DOES NOT EXIST!
-SER2 &SPACE
&PRINT EXEC SEQUENCE RUNP5C IS TERMINATING ABNORMALLY...
&SPACE
&QUIT
-STPS2 &STACK 1 1 4 16
&STACK KT
SORT &ALPHA3 PEE (BRIEF)
&SRET = &INDEX#
&PRINT &SRET &INDEX# &ALPHA3
&SPACE
&IF &SRET EQ # &GOTO -STPS3

```



```

-SER1 &PRINT SORT RETURN CODE WAS &SPET
      &GOTO -SER2
-STPS3 STATE &DSN REE P
      &IF &INDEX EQ 0 &GOTO -STPS4
      &PRINT SORT OUTPUT FILE DOES NOT EXIST
      &GOTO -SER1
-STPS4 ERASE &ALPHA3 REE P
      ALTER &DSN REE P &ALPHA3 REE P
      ERASE &DSN REE P
      &EXIT

```

Program P5C Specific User Instructions

Each run of Program P5C is associated with a unique ETAM project results file. Accordingly, the name of the project of concern must be provided by the User when invoking the RUNP5C executive. On the sample run to follow, this has been accomplished using the project name "PN123".

Program P5C Error Messages

The following error message text can result from running Program P5C:

**** ERROR NUMBER XX HAS OCCURED ****

(followed by a general error data output line)

This message is significant for only the following error number "XX":

- 01 - The REE input file (File Number 32) cannot contain deleted entities. This error occurs if such an entity is passed into the REE file by Program P5B.

Program P5C Sample Run Output

The following is a complete run of Program P5C for project "PN123".

```

      RUNP5C PN123

PROJECT NAMED PN123 ALREADY EXISTS,
IS THIS CORRECT? (RESPOND YES OR QUIT)

YES

```

OUTPUT TO GO TO TERMINAL, OFFLINE PRINTER, BOTH, OR QUIT?
 ENTER TERM, PRTR, BOTH, OR QUIT
 BOTH

\$\$\$ Ø PN123

EXECUTION:

*** EXTRACT SEARCH RESULTS FOR PROJECT - PN123
 3-D PROCEDURAL TRAINER

PAGE NUMBER : 1

| | | | | |
|----|----------|----------|------|------------------|
| 1 | ORIGINAL | A193ØØ5Ø | 2213 | INERT NAV PRINC |
| 2 | ORIGINAL | A242ØØ1Ø | 6529 | IS A |
| 3 | ORIGINAL | A412ØØ1Ø | 6Ø78 | EA-A |
| 4 | ORIGINAL | A412ØØ1Ø | 6287 | EA A |
| 5 | ORIGINAL | A431ØØ11 | 1Ø35 | EOD BASIC NAVY |
| 6 | ORIGINAL | A431ØØ14 | 1Ø36 | EOD REFR NAVY |
| 7 | ORIGINAL | A433ØØ19 | 2Ø4Ø | MASTER DIVQUAL |
| 8 | ORIGINAL | A433ØØ25 | 2Ø82 | DIVER FIRST |
| 9 | ORIGINAL | A491ØØ14 | 2Ø4G | RADIUM REMOV OPS |
| 10 | ORIGINAL | A551ØØ19 | Ø133 | CAR HAND BAS |
| 11 | ORIGINAL | A551ØØ27 | 3931 | UNREP MECH/HYD |
| 12 | ORIGINAL | A551ØØ68 | Ø134 | FORK LIFT OPER |
| 13 | ORIGINAL | A58ØØØ16 | 6Ø53 | CTO A |
| 14 | ORIGINAL | A651ØØ2Ø | 5399 | 12ØØ PSI BT |
| 15 | ORIGINAL | A652ØØ5Ø | 5224 | OX GENR 6L16ØP |
| 16 | ORIGINAL | A652ØØ68 | 463E | SOLAR GAS TURBIN |
| 17 | ORIGINAL | A67ØØØ11 | 3Ø78 | WATCH REPAIR |
| 18 | ORIGINAL | A7Ø1ØØ27 | 337M | WELD/HPRES PIPE |
| 19 | ORIGINAL | A72ØØØ13 | 466Z | UT-J |
| 20 | ORIGINAL | C ØØ3722 | 2887 | TA4JF FAM PILOTS |
| 21 | ORIGINAL | C ØØ3722 | 9ØØ7 | TA4JF FAM PILOTS |
| 22 | ORIGINAL | C ØØ3722 | 9ØØ9 | TA4JF FAM PILOTS |
| 23 | ORIGINAL | C ØØ3722 | 9Ø1Ø | TA4JF FAM PILOTS |
| 24 | ORIGINAL | C ØØ3722 | 9738 | TA4JF FAM PILOTS |
| 25 | ORIGINAL | C 2C3352 | 2576 | UH1N A/C FAM/P/ |
| 26 | ORIGINAL | C1ØØ3834 | 7529 | AAS18 INT MAI |
| 27 | ORIGINAL | C1Ø23793 | 7914 | A7AB ATT HEADING |
| 28 | ORIGINAL | C1Ø23793 | 7915 | A7AB ATT HEADING |
| 29 | ORIGINAL | C1213Ø11 | 346L | AWM23 RADIO FREQ |
| 30 | ORIGINAL | C1213Ø11 | 544L | AWM23 RADIO FREQ |
| 31 | ORIGINAL | C6ØØ3472 | 34ØC | E2C WEA SYS FAM |
| 32 | ORIGINAL | C6Ø23536 | 341D | 54H6Ø77 PROP INT |

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| | | | | |
|----|----------|----------|------|--------------------------------------|
| 33 | ORIGINAL | C6463103 | 7365 | CVA/CV.ALW SUPV |
| 34 | ORIGINAL | J2210357 | 538Q | MULTI-THREAT TNG |
| 35 | ORIGINAL | J2330203 | 2637 | ADV EW OP'S CRSE |
| 36 | ORIGINAL | J2430974 | 2181 | IPC |
| 37 | ORIGINAL | K2330066 | 205Y | SUB EW OP-ADV |
| 38 | ORIGINAL | L6610056 | NONE | (NO ABBREVIATED FILE DATA AVAILABLE) |
| 39 | ORIGINAL | M198100E | NONE | (NO ABBREVIATED FILE DATA AVAILABLE) |
| 40 | ORIGINAL | N7010320 | NONE | (NO ABBREVIATED FILE DATA AVAILABLE) |
| 41 | ORIGINAL | Q 2C0015 | NONE | (NO ABBREVIATED FILE DATA AVAILABLE) |
| 42 | ORIGINAL | 83000010 | NONE | (NO ABBREVIATED FILE DATA AVAILABLE) |
| 43 | ORIGINAL | 83000012 | NONE | (NO ABBREVIATED FILE DATA AVAILABLE) |
| 44 | ADDED | A1010108 | 7654 | (NO ABBREVIATED FILE DATA AVAILABLE) |

*** NOW AT EOF ON SEARCH RESULTS FILE ***

| | |
|---|----|
| TOTAL NUMBER COURSE RECORDS PROCESSED : | 44 |
| TOTAL NUMBER VEHICLE RECORDS PROCESSED : | 0 |
| TOTAL NUMBER JOBTASK RECORDS PROCESSED : | 0 |
| TOTAL NUMBER ROE RESULT RECORDS READ : | 44 |
| RECORDS WITHOUT MATCHING ABBREVIATED DATA : | 7 |
| TOTAL NUMBER DIRECTORY SEARCH FAILURES : | 0 |

TAEG REPORT NO. 40

PROGRAM NAME : P7

ENTRY POINT : P7

RUN EXECUTIVES(S) : RUNP7

USER OUTPUT VIA : Terminal Only

USER PROMPTING : None

FUNCTION : Makeup Course CIN Directory (File Number 8) and
CDP Directory (File Number 9)

NOTE : This program contains an internal SORT invocation

| <u>Internal Filename (DDNAME)</u> | <u>Usage</u> | <u>Refer To File Reference Number</u> | <u>Media</u> | <u>External NCSS Filename/Filetype</u> | <u>Format</u> |
|---|--------------|---|----------------|--|---------------|
| MREF | INOUT | 1 | DASD | ETAM/MREF | F, 80, 80 |
| COURSE | INPUT | 7 | DASD | ETAM/COURSE | F, 80, 80 |
| DCIN | OUTPUT | 8 | DASD | ETAM/DCIN | F, 760, 760 |
| DCDP | OUTPUT | 9 | DASD | ETAM/DCDP | F, 1200, 1200 |
| SORTWK01 SORTWK02 SORTWK03 | SORT | N/A | DASD (TEMP) | Standard internal SORT work areas | |

Discussion

This module constructs the two directories associated with the Abbreviated Course file. The Course file itself is used as the primary input. The directories will consist of Course CDP numbers and record pointers in one file and Course CIN numbers and pointers in the other.

Each directory is sorted by its key field (CIN or CDP); a PL/1 invocation of the standard PL/1 sort package is included within Program P7. Some of the messages output from this module are the standard Sort/Merge messages and warnings.

Listing of EXECUTIVE = RUNP7

```

&TYPE OFF
&COMMENT MAKEUP OF COURSE DIRECTORIES (CIN AND CDP)
&COMMENT NO ENTRY PARMS
FILEDEF COURSE DSK ETAM COURSE RE F LR 80 BL 80
FILEDEF MREF DSK ETAM MREF RE F LR 80 BL 80
FILEDEF DCIN DSK ETAM DCIN RE F LR 760 BL 760
FILEDEF DCDP DSK ETAM DCDP RE F LR 1200 BL 1200
ATTACH TEMP5 AS 192 BRIEF
FILEDEF SORTWK01 DSK W1 SORT T
FILEDEF SORTWK02 DSK W2 SORT T
FILEDEF SORTWK03 DSK W3 SORT T
LOAD P7 (CLEAR LIBE) PLILIB
START (BRIEF)
FILEDEF * CLEAR
DETACH 192 BRIEF
&EXIT

```

Program P7 Error Messages

In the event of an error detected by the Sort/Merge package:

** SORT RETURN CODE INVALID, CODE WAS 16 **

COURSE DIRECTORY CONSTRUCT PROGRAM IS NOW TERMINATING

The following message strings are caused by overflow of the internal table allotted for directories. The current implementation allots a CIN directory maximum of 304 entries, and a CDP directory max of 1200 entries. One of the message sequences below will result in the event of overflow:

**** CIN TABLE OVERFLOW ****

/or/

**** CDP TABLE OVERFLOW ****

DIRECTORY CONSTRUCT PROGRAM IS TERMINATING DUE TO ERROR

** SORT RETURN CODE INVALID, CODE WAS 8 **

COURSE DIRECTORY CONSTRUCT PROGRAM IS NOW TERMINATING

Program P7 Specific User Instructions

None.

Program P7 Sample Run Output

The following represents an actual run of P7. The output is shown in its entirety. Note that this output is directed only to the online terminal printer device. The output below represents the actual contents of both the Course CIN and CDP directories in the current ETAM implementation.

RUNP7

\$

ABBREVIATED COURSE DATABASE CIN/CDP DIRECTORY
CONSTRUCT PROGRAM

IERØ36I - B = 363

IERØ37I - G = 543

IERØ38I - NMAX = 1197Ø

*** EOF ON COURSE INPUT FILE ; SORT PHASE START

IERØ45I - END SORT PH

IERØ49I - SKIP MERGE PH

*** SORT PHASE COMPLETE ; STARTING CIN DIRECTORY MAKEUP

| CIN NUM | CIN | TOTAL CDPs | REC PTR |
|---------|----------|------------|---------|
| ----- | ----- | ----- | ----- |
| 1 | A ØØØ111 | 1 | Ø |
| 2 | A 2EØØ13 | 1 | 1 |
| 3 | A 2GØØ14 | 1 | 2 |
| 4 | A 8CØØ15 | 1 | 3 |
| 5 | A1Ø1Ø1Ø8 | 3 | 6 |
| 6 | A193ØØ5Ø | 1 | 7 |
| 7 | A242ØØ1Ø | 1 | 8 |
| 8 | A412ØØ1Ø | 2 | 9 |
| 9 | A431ØØ11 | 1 | 11 |
| 1Ø | A431ØØ14 | 1 | 12 |
| 11 | A433ØØ19 | 1 | 13 |
| 12 | A433ØØ25 | 1 | 14 |
| 13 | A491ØØ14 | 1 | 15 |
| 14 | A5ØØØØ11 | 2 | 17 |
| 15 | A5ØØØØ28 | 2 | 19 |
| 16 | A5ØØØØ32 | 4 | 23 |
| 17 | A51ØØØ12 | 1 | 24 |
| 18 | A532ØØ15 | 1 | 25 |
| 19 | A542ØØ14 | 1 | 26 |
| 2Ø | A551ØØ19 | 1 | 27 |
| 21 | A551ØØ27 | 1 | 28 |
| 22 | A551ØØ68 | 1 | 29 |
| 23 | A57ØØØ1Ø | 1 | 3Ø |
| 24 | A58ØØØ16 | 1 | 31 |
| 25 | A651ØØ1Ø | 2 | 33 |
| 26 | A651ØØ2Ø | 2 | 35 |
| 27 | A652ØØ5Ø | 1 | 36 |
| 28 | A652ØØ68 | 1 | 37 |
| 29 | A67ØØØ11 | 1 | 38 |
| 3Ø | A67ØØØ25 | 1 | 39 |
| 31 | A7Ø1ØØ27 | 2 | 41 |
| 32 | A7Ø2ØØ24 | 1 | 42 |

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| | | | |
|----|-----------|---|-----|
| 33 | A7100016 | 1 | 43 |
| 34 | A7120011 | 2 | 45 |
| 35 | A7200013 | 2 | 47 |
| 36 | C 0003491 | 1 | 48 |
| 37 | C 0003722 | 5 | 49 |
| 38 | C 0003807 | 1 | 54 |
| 39 | C 2A3502 | 1 | 55 |
| 40 | C 2A3531 | 1 | 56 |
| 41 | C 2A3831 | 4 | 57 |
| 42 | C 2C3352 | 1 | 61 |
| 43 | C10003834 | 1 | 62 |
| 44 | C1023793 | 2 | 63 |
| 45 | C1213011 | 2 | 65 |
| 46 | C2222010 | 1 | 67 |
| 47 | C4202011 | 1 | 68 |
| 48 | C5163203 | 6 | 69 |
| 49 | C60003358 | 1 | 75 |
| 50 | C60003472 | 1 | 76 |
| 51 | C60003831 | 2 | 77 |
| 52 | C6023353 | 1 | 79 |
| 53 | C6023482 | 2 | 81 |
| 54 | C6023536 | 2 | 83 |
| 55 | C6463103 | 3 | 86 |
| 56 | J 2E0100 | 1 | 87 |
| 57 | J2210303 | 2 | 89 |
| 58 | J2210310 | 1 | 90 |
| 59 | J2210344 | 2 | 91 |
| 60 | J2210348 | 1 | 93 |
| 61 | J2210357 | 2 | 95 |
| 62 | J2330203 | 1 | 96 |
| 63 | J2330211 | 5 | 97 |
| 64 | J2430974 | 1 | 102 |
| 65 | J2500313 | 2 | 103 |
| 66 | J6440914 | 1 | 105 |
| 67 | J6520474 | 1 | 106 |
| 68 | K 2E1078 | 1 | 107 |
| 69 | K2210042 | 1 | 108 |
| 70 | K2220035 | 1 | 109 |
| 71 | K2330066 | 1 | 110 |

*** LAST OF CIN DIRECTORY ENTRIES ENCOUNTERED ***

*** NOW STARTING CDP DIRECTORY ***

| CDP NUM | CDP | REC PTR |
|---------|------|---------|
| ----- | ---- | ----- |
| 1 | 0133 | 27 |
| 2 | 0134 | 29 |
| 3 | 0143 | 2 |
| 4 | 0303 | 1 |
| 5 | 0327 | 0 |
| 6 | 1034 | 105 |
| 7 | 1035 | 11 |

TAEG REPORT NO. 40

| | | |
|----|------|-----|
| 8 | 1036 | 12 |
| 9 | 2010 | 20 |
| 10 | 202M | 21 |
| 11 | 204E | 80 |
| 12 | 204G | 15 |
| 13 | 2040 | 13 |
| 14 | 205W | 97 |
| 15 | 205Y | 110 |
| 16 | 2082 | 14 |
| 17 | 2121 | 39 |
| 18 | 2131 | 3 |
| 19 | 2181 | 102 |
| 20 | 2213 | 7 |
| 21 | 2374 | 57 |
| 22 | 2398 | 18 |
| 23 | 2576 | 61 |
| 24 | 2601 | 22 |
| 25 | 2637 | 96 |
| 26 | 265V | 103 |
| 27 | 266C | 104 |
| 28 | 2667 | 81 |
| 29 | 2671 | 82 |
| 30 | 2717 | 69 |
| 31 | 2887 | 49 |
| 32 | 3078 | 38 |
| 33 | 3192 | 16 |
| 34 | 3193 | 17 |
| 35 | 3202 | 40 |
| 36 | 3205 | 43 |
| 37 | 321X | 70 |
| 38 | 321Z | 71 |
| 39 | 322B | 72 |
| 40 | 322D | 73 |
| 41 | 322E | 74 |
| 42 | 3249 | 30 |
| 43 | 337M | 41 |
| 44 | 340C | 76 |
| 45 | 341D | 83 |
| 46 | 346F | 44 |
| 47 | 346L | 65 |
| 48 | 349H | 84 |
| 49 | 349K | 85 |
| 50 | 351J | 42 |
| 51 | 351Q | 45 |
| 52 | 3931 | 28 |
| 53 | 4028 | 46 |
| 54 | 4138 | 34 |
| 55 | 4510 | 68 |
| 56 | 461W | 19 |
| 57 | 463E | 37 |
| 58 | 466Z | 47 |
| 59 | 470P | 25 |
| 60 | 4717 | 26 |

TAEG REPORT NO. 40

| | | |
|-----|------|-----|
| 61 | 4964 | 75 |
| 62 | 516U | 4 |
| 63 | 5224 | 36 |
| 64 | 525U | 98 |
| 65 | 526K | 91 |
| 66 | 528E | 88 |
| 67 | 528H | 92 |
| 68 | 528J | 93 |
| 69 | 5324 | 99 |
| 70 | 533P | 94 |
| 71 | 533Z | 100 |
| 72 | 534A | 89 |
| 73 | 534Z | 109 |
| 74 | 538P | 90 |
| 75 | 538Q | 95 |
| 76 | 539J | 23 |
| 77 | 5399 | 35 |
| 78 | 540M | 58 |
| 79 | 540N | 59 |
| 80 | 542H | 101 |
| 81 | 544L | 66 |
| 82 | 5535 | 5 |
| 83 | 5599 | 108 |
| 84 | 6053 | 31 |
| 85 | 6057 | 24 |
| 86 | 6069 | 32 |
| 87 | 6078 | 9 |
| 88 | 6260 | 33 |
| 89 | 6278 | 67 |
| 90 | 6287 | 10 |
| 91 | 6529 | 8 |
| 92 | 7365 | 86 |
| 93 | 7529 | 62 |
| 94 | 7540 | 77 |
| 95 | 7541 | 78 |
| 96 | 7654 | 6 |
| 97 | 7914 | 63 |
| 98 | 7915 | 64 |
| 99 | 7938 | 79 |
| 100 | 8178 | 106 |
| 101 | 9007 | 50 |
| 102 | 9009 | 51 |
| 103 | 9010 | 52 |
| 104 | 9033 | 54 |
| 105 | 9051 | 55 |
| 106 | 9062 | 60 |
| 107 | 9279 | 87 |
| 108 | 9738 | 53 |
| 109 | 9740 | 107 |
| 110 | 9750 | 48 |
| 111 | 9751 | 56 |

IER055I - INSERT 222,DELETE 222
 IER054I - RCD IN ,OUT
 IER052I - EOJ
 *** SORT COMPLETED OK, CODE = 0 ***

*** CIN DIRECTORY HAS BEEN SUCCESSFULLY REWRITTEN

*** CDP DIRECTORY HAS BEEN SUCCESSFULLY REWRITTEN

COURSE DIRECTORY CONSTRUCT PROGRAM IS NOW TERMINATING

PROGRAM NAME : P7A

ENTRY POINT : P7A

RUN EXECUTIVES(S) : RUNP7A

USER OUTPUT VIA : Terminal Only

USER PROMPTING : None

FUNCTION : Load Course Descriptor File (File Number 6)

| <u>Internal Filename (DDNAME)</u> | <u>Usage</u> | <u>Refer To File Reference Number</u> | <u>Media</u> | <u>External NCSS Filename/Filetype</u> | <u>Format</u> |
|---|--------------|---|--------------|--|---------------|
| MREF | INOUT | 1 | DASD | ETAM/MREF | F, 80, 80 |
| DIND | DIRECT | 3 | DASD | ETAM/DIND | F, 80, 80 |
| DESC | OUTPUT | 6 | DASD | ETAM/DESC | F, 213, 213 |
| DCARD | INPUT | 5 | DASD | ETAM/SCDESC | F, 80, 80 |

Discussion

The output of this program is the Course Descriptor file (File Number 6). Note that the same descriptor card input file (File Number 5) was used in Program P14 to select the appropriate Course file CIN numbers. Accordingly, there will be no errors of mismatched CIN numbers in the run of this Program P7A.

Listing of EXECUTIVE = RUNP7A

```

&TYPE OFF
&COMMENT COURSE DESCRIPTORS FILE LOAD
&COMMENT NO ENTRY PARMS
FILEDEF MREF DSK ETAM MREF RE F LR 80 BL 80
FILEDEF DIND DSK ETAM DIND RE F LR 80 BL 80
FILEDEF DCARD DSK ETAM SCDESC RE F LR 80 BL 80
FILEDEF DESC DSK ETAM DESC RE F LR 213 BL 213
LOAD P7A (CLEAR LIBE) PLILIB
START (BRIEF)
FILEDEF * CLEAR
&EXIT

```

Program P7A Error Messages

The only error diagnosed by this program is that of an invalid numeric subscript occurring on an input card. This error is detected by comparing the given descriptor numbers with those indicated as legal in the Master Descriptor Index file (File Number 3). The following error message results in the event of a mis-compare; this error condition is not considered terminal, and the program continues with the next subscript for consideration.

**** ERROR IN CIN -12345678- DESCRIPTOR SUBSCRIPT 999 DOES NOT EXIST ****

Program P7A Specific User Instructions

None.

Program P7A Sample Run Output

The following represents an actual run of Program P7A. The output is not shown in its entirety. Note that this output is directed only to the online terminal printer device. The output shown represents the current contents of the Course Descriptor file.

```

      RUNP7A
    >
    COURSE FILE DESCRIPTOR LOAD PROGRAM

      CIN   ASSIGNED DESCRIPTOR(S)
      -----
A 000111 01 03 04 11 12 13 20 21 22 33 42 45 48 53 65 66 82
A 2E0013 01 02 03 10 21 33 65 80 82
A 2G0014 01 02 03 12 33 41 42 44 45 48 52 53 65 69 82 84
A 4A0025 03 12 21 22 33 80
A 8C0015 01 05 12 20 32 80
A1010108 30 31 71 80 83
A1020060 03 31 64 65 71 85
A1020093 03
A1020095 05 11 12 13 20 21 31 64 65 82 83
A1930050 05 31 80
A2420010 05 20 21 22 30 32 63 64 65 66 85
A2440010 05 10 11 12 13 32 60 62 63 66 80

```

(Completion of text output presented on following page)

NOTE - Majority of text output has been eliminated for the sake of brevity. The last few lines of Program P7A output are as shown below.

```

K 002044 01 03 04 11 12 13 20 22 32 64 65 66 82 84
K 2E1078 01 02 03 05 10 12 21 33 42 45 49 53 65 66 72 82
K2210042 01 05 20 30 42 45 53 63 64 82 83
K2220035 02 03 20 30 41 44 49 52 61 62 64 67 69 72 86
K2330066 01 02 03 05 13 14 20 30 40 41 44 52 61 62 63 64 81 84
L1010024 05 80
L6610056 03 11 12 13 31 40 43 46 49 52 62 63 64 65 85
M1981000E 03 11 20 31 40 44 46 49 52 64 65 84 85
N10000555 05 11 12 13 20 21 31 42 45 48 53 64 65 71 84
N7010320 03 05 10 11 12 13 20 31 40 44 46 49 51 61 62 63 64 85
P 0033008 01 02 03 04 11 12 20 21 22 33 42 45 48 53 65 66 82 83
Q 2C0015 03 11 12 13 20 30 40 43 46 49 51 64 67 68 85
R2106104 05 20 32 42 45 48 64 83 89
S5000029 01 02 03 04 10 12 13 20 32 44 60 65 66 84
83000010 02 03 05 10 11 12 13 20 30 62 63 64 65 81 84
83000012 03 04 05 11 12 13 20 21 30 32 62 63 64 65 69 81 83

```

*** NOW AT EOF ON DESCRIPTOR CARD INPUT ***

```

TOTAL NUMBER DESCRIPTOR INPUT CARDS : 132
TOTAL UNIQUE CIN NUMBERS IN INPUT : 122
TOTAL NUMBER OUTPUT DESCRIPTOR RECORDS : 122
TOTAL NUMBER CIN OR SUBSCRIPT ERRORS : 0

```

COURSE DESCRIPTOR LOAD PROGRAM IS TERMINATING

TAEG REPORT NO. 40

PROGRAM NAME : P7B

ENTRY POINT : IHECMS (Parameter Supplied by Executive RUNP7B at Entry)

RUN EXECUTIVES(S) : RUNP7B, DEVICE, JCL

USER OUTPUT VIA : Terminal, Offline Printer, or Both

USER PROMPTING : At Executive Level: (1) Output Device Select
(2) Print Option (A, B, or C) Select

FUNCTION : Print Data Contained Within or Associated With the
Abbreviated Course File (File Number 7)

| <u>Internal Filename (DDNAME)</u> | <u>Usage</u> | <u>Refer To File Reference Number</u> | <u>Media</u> | <u>External NCSS Filename/Filetype</u> | <u>Format</u> |
|---|--------------|---|--------------|--|---------------|
| MPTR | OUTPUT | N/A : THIS IS THE OFFLINE PRINTER | | | FA, 121, 121 |
| MREF | INPUT | 1 | DASD | ETAM/MREF | F, 80, 80 |
| COURSE | DIRECT | 7 | DASD | ETAM/COURSE | F, 80, 80 |
| INDESC | INPUT | 3 | DASD | ETAM/DIND | F, 80, 80 |
| DCDP | INPUT | 9 | DASD | ETAM/DCDP | F, 1200, 1200 |

Discussion

This module serves to provide printer dumps of the contents of the Abbreviated Course file. Due to the size of the output, offline print is recommended as the most economical method.

Listing of EXECUTIVE = RUNP7B

```

&TYPE OFF
&COMMENT G.P. PRINT EXEC FOR COURSES
&COMMENT ENTRY/DEVICE PROMPTS DONE HERE AND IN EXEC = DEVICE
&SPACE
&PRINT ABBR. COURSE FILE PRINT PROGRAM IS STARTING
&SPACE
&PRINT ENTER SINGLE CHARACTER OPTION (OR QUIT TO TERMINATE)
&PRINT A = PRINT ALL COURSES, SORTED BY CIN
&PRINT B = PRINT ALL COURSES IN CDP ORDER
&PRINT C = LIST DESCRIPTORS ASSIGNED TO COURSE DATA

```

```

-STP1 &READ ARGS
      &IF &1 EQ QUIT &QUIT
      &ALPHA0 = &1
      &IF &1 EQ A &GOTO -STP2
      &IF &1 EQ B &GOTO -STP2
      &IF &1 EQ C &GOTO -STP2
      &SPACE
      &PRINT UNABLE TO DETERMINE ENTRY TYPE - TRY AGAIN
      &SPACE
      &GOTO -STP1
-STP2 EXEC DEVICE
      &ALPHA2 = &ALPHA0 !! &ALPHA1
-STP3 &SPACE
EXEC JCL
FILEDEF DIND CLEAR
FILEDEF INDESC DSK ETAM DIND RE F LR 80 BL 80
FILEDEF MPTR PTR RE FA LR 121 BL 121
LOAD P7B (CLEAR LIBE) PLILIB
START IHECMS &ALPHA2 (BRIEF)
FILEDEF * CLEAR
&EXIT

```

Program P7B Specific User Instructions

As shown in the samples following, the User will be prompted for both output device and type of output. The type of output is categorized by the following options in this program:

| <u>Option</u> | <u>Meaning</u> |
|---------------|---|
| A | Print the contents of each Abbreviated Course file record; the output is to be ordered by CIN number. |
| B | Print the same contents; output order is by CDP number. |
| C | Print the descriptors associated with Courses; the data for this output is retrieved from the Master Descriptor Index file (File Number 3). |

NOTE - To print each of the Course CIN numbers and the actual descriptors assigned to each, use Option "C" of Program P20.

Program P7B Error Messages

The following error message can result during Program P7B execution:

** ERROR XX OCCURED ; NREC WAS YYYYY **

In this message, "XX" is the error number as explained below. The quantity "YYYYY" is the number of the input record on which the error was detected.

| <u>XX</u> | <u>Meaning</u> |
|-----------|--|
| 01 | Print Option "B" was being processed. The CDP Directory File indicated that a record was to be accessed from the Abbreviated Course file. The record number of the new record was outside the bounds of the Course file. Note that the maximum number of allowed records appearing in the Course file is maintained in the first count (subscript = 1) of the Master Reference file (File Number 1). |
| 02 | Print Option "C" processing. Master Reference file (subscript = 4) contains the maximum usable record in the Descriptor Index (File Number 3) file. An attempt was made to read a record beyond this allowable limit. |

Program P7B Sample Run Output - Print Option "A"

The following represents a sample of an actual run of Program P7B using Print Option "A". The appearance of the output resulting from Option "B" would be the same, except for ordering of the individual records. Accordingly, a "B" Option sample will not be shown.

RUNP7B

ABBR. COURSE FILE PRINT PROGRAM IS STARTING

ENTER SINGLE CHARACTER OPTION (OR QUIT TO TERMINATE)

A = PRINT ALL COURSES, SORTED BY CIN

B = PRINT ALL COURSES IN CDP ORDER

C = LIST DESCRIPTORS ASSIGNED TO COURSE DATA

A

OUTPUT TO GO TO TERMINAL, OFFLINE PRINTER, BOTH, OR QUIT?
ENTER TERM, PRTR, BOTH, OR QUIT

TERM

\$\$\$EXECUTION:

PAGE : 1

| CIN | CDP | COURSE TITLE | NOBC | NEC | RMS | TPC | LEN | THRS | LHRS | ATTR | STRX |
|---------------|------|-----------------|---------------------|-----------|------------|-----|-----|------|------|------|------|
| A 000111 | 0327 | SWO ADV COMMAND | 0000 | PDB 04350 | 40 | 224 | 16 | 0.1 | 0.1 | 0.1 | 0.1 |
| PRIORITY : | | TYPE CRS : C2 | SERVICE CDE : 1 | | COST/AOB : | | | | | | |
| TRAPS : T | | STATUS : A | STATUS DTE : 000000 | | METH-I : L | | | | | | |
| A 200013 | 0303 | TAL PCO/PXO ORI | 0000 | KBA 03250 | 12 | 80 | 0 | 0.0 | 0.0 | 0.0 | 0.0 |
| PRIORITY : 12 | | TYPE CRS : C2 | SERVICE CDE : 1 | | COST/AOB : | | | | | | |
| TRAPS : | | STATUS : A | STATUS DTE : 62171 | | METH-I : P | | | | | | |
| A 200014 | 0143 | MINE C/M OFF | 9268 | CCB 04311 | 33 | 120 | 30 | 0.0 | 0.0 | 0.0 | 0.0 |
| PRIORITY : 25 | | TYPE CRS : C2 | SERVICE CDE : 1 | | COST/AOB : | | | | | | |
| TRAPS : | | STATUS : A | STATUS DTE : 72183 | | METH-I : L | | | | | | |

.... Output terminated at this point ...

Program P7B Sample Run Output - Print Option "C"

The following is an actual Program P7B run using Print Option "C".

RUNP7B

ABBR. COURSE FILE PRINT PROGRAM IS STARTING

ENTER SINGLE CHARACTER OPTION (OR QUIT TO TERMINATE)

A = PRINT ALL COURSES, SORTED BY CIN

B = PRINT ALL COURSES IN CDP ORDER

C = LIST DESCRIPTORS ASSIGNED TO COURSE DATA

C

OUTPUT TO GO TO TERMINAL, OFFLINE PRINTER, BOTH, OR QUIT?

ENTER TERM, PRTR, BOTH, OR QUIT

TERM

\$\$EXECUTION:

PAGE : 1

-- COURSES

*** REFERENCE KNOWLEDGE

01 SYSTEM PURPOSES

02 ORGANIZATIONAL ROLES

03 CONTEXTS OF OPERATION

04 ORGANIZATIONAL RULES

05 OTHER

*** ENABLING KNOWLEDGE

10 OPERATIONAL GOAL CRITERIA

11 NOMENCLATURE, IDENTIFICATION, LOCATION

12 PROCEDURAL DESCRIPTIONS

13 JOB RELEVANT FACTS, RULES

14 OTHER

*** TASK FORMATS

20 PROCEDURE FORMATS

21 DECISION FORMATS

22 CONSTRUCTION FORMATS

23 OTHER

*** GROSS JOB CATEGORIES

30 OPERATIONS

31 MAINTENANCE

32 SERVICE & ADMINISTRATION

33 COMMAND

34 OTHER

*** OBJECTIVE TASK VARIABLES AS MANIFEST IN THE TRAINING

- 40 EQUIPMENT & OBJECTS USED: REAL
- 41 EQUIPMENT & OBJECTS USED: SIMULATED
- 42 EQUIPMENT & OBJECTS USED: SYMBOLIC
- 43 ENVIRONMENTS IN WHICH TASK IS TRAINED: REAL
- 44 ENVIRONMENTS IN WHICH TASK IS TRAINED: SIMULATED
- 45 ENVIRONMENTS IN WHICH TASK IS TRAINED: SYMBOLIC
- 46 TOOLS/INSTRUMENTS USED IN TRAINING: REAL
- 47 TOOLS/INSTRUMENTS USED IN TRAINING: SIMULATED
- 48 TOOLS/INSTRUMENTS USED IN TRAINING: SYMBOLIC
- 49 REF/ENABLING INFO IN DOING TASK: APPLIED
- 50 REF/ENABLING INFO IN DOING TASK: NOT APPLIED
- 51 CRITERIA OF TASK PERFORMANCE: REAL
- 52 CRITERIA OF TASK PERFORMANCE: SIMULATED
- 53 CRITERIA OF TASK PERFORMANCE: SYMBOLIC

*** TASK FUNCTIONS DOMINANT IN TRAINING

- 60 GOAL PROJECTION
- 61 SCAN-DETECT
- 62 IDENTIFY
- 63 INTERPRET
- 64 PROCEDURE FOLLOWING
- 65 DECIDE
- 66 CONSTRUCT, PLAN
- 67 TRACK
- 68 MOTOR PERFORMANCE
- 69 INTERPERSONAL INTERACTION
- 70 RECALL TASK-CYCLE INFORMATION
- 71 RECALL ENABLING INFORMATION
- 72 ADAPT IMPROVISATIONALLY/IMPROMPTU

PAGE : 2

73 OTHER

*** STAGE OF LEARNING

- 80 ORIENTATION, FAMILIARIZATION
- 81 TASK NOMENCLATURE, IDENTIS, LOCATIONS, FACTS, RULES
- 82 TASK FORMATS AT CONCEPTUAL LEVEL
- 83 PROCEDURES AT VERBAL LEVEL ONLY
- 84 TASK COMPONENTS WITH GUIDANCE
- 85 ENTIRE JOB-TASK PROCEDURALLY AT BARELY ACCEPTABLE MASTERY
- 86 HIGHLY PROFICIENT IN WORK CONTEXT
- 87 UNUSUAL TASK CONDITIONS
- 88 PERFORMANCE AT KEY MAN LEVEL
- 89 REFRESHER LEARNING

PROGRAM NAME : P8

ENTRY POINT : P8

RUN EXECUTIVES(S) : RUNP8

USER OUTPUT VIA : Terminal Only

USER PROMPTING : None

FUNCTION : Makeup Vehicle Abbreviated Data File, Directory,
and Descriptor File (File Numbers 15, 16, and 12,
Inclusive)

| <u>Internal Filename (DDNAME)</u> | <u>Usage</u> | <u>Refer To File Reference Number</u> | <u>Media</u> | <u>Filename/Filetype</u> | <u>Format</u> |
|---|--------------|---|--------------|--------------------------|---------------|
| MREF | INOUT | 1 | DASD | ETAM/MREF | F, 80, 80 |
| DIND | DIRECT | 3 | DASD | ETAM/DIND | F, 80, 80 |
| VDATA | INPUT | 14 | DASB | ETAM/SVDATA | F, 80, 80 |
| VCDESC | INPUT | 11 | DASD | ETAM/SVCDESC | F, 80, 80 |
| DVEH | OUTPUT | 16 | DASD | ETAM/DVEH | F, 750, 750 |
| VDESC | OUTPUT | 12 | DASD | ETAM/VDESC | F, 213, 213 |
| VEHS | OUTPUT | 15 | DASD | ETAM/VEHS | F, 80, 80 |

Discussion

All three files of the Abbreviated Vehicle data base are created by Program P8. This includes the data file (File Number 15), the Vehicle Directory (File Number 16), and the Vehicle Descriptor file (File Number 12).

Listing of EXECUTIVE = RUNP8

```

&TYPE OFF
&COMMENT MAKE VEH DATA/DIRECTORY/DESCRIPTOR FILES
&COMMENT NO ENTRY PARMS
FILEDEF MREF DSK ETAM MREF RE F LR 80 BL 80
FILEDEF DIND DSK ETAM DIND RE F LR 80 BL 80
FILEDEF VDATA DSK ETAM SVDATA RE F LR 80 BL 80
FILEDEF VCDESC DSK ETAM SVCDESC RE F LR 80 BL 80
FILEDEF VDESC DSK ETAM VDESC RE F LR 213 BL 213
FILEDEF VEHS DSK ETAM VEHS RE F LR 80 BL 80
FILEDEF DVEH DSK ETAM DVEH RE F LR 750 BL 750
LOAD P8 (CLEAR LIBE) PLILIB
START (BRIEF)
FILEDEF * CLEAR
&EXIT

```

Program P8 Error Messages

Within the data input deck (File Number 11), a given Stock Number can exist only on one card. Since the deck is sorted, duplicates will be signaled by the following message, and then rejected:

```

** DUPLICATE STOCK NUMBER ON PRECEEDING CARD
   RECORD WILL BE IGNORED **

```

NOTE - See sample output (to follow) for an example of this message.

Within the descriptor input deck, a given numeric descriptor can be illegal. Program P8 verifies the existence of each such descriptor through use of the Master Descriptor Index (File Number 3). If an error is detected, the following message will ensue:

```

** ERROR IN VEH -1234567890123- DESCRIPTOR SUBSCRIPT
   999 DOES NOT EXIST **

```


Since both the Vehicle data cards and the Vehicle descriptor cards are input to P8, discrepancies can exist within the Stock Numbers. The following messages, if applicable, will be printed after the descriptor file has reached EOF and the EOF message printed.

** THE FOLLOWING DATA FILE VEH NUMBERS HAVE NO
MATCH IN THE VEH DESCRIPTOR INPUT **

XXXXXXXXXXXXX
YYYYYYYYYYYYY

...

and/or the following

** THE FOLLOWING DESCRIPTOR CARD VEH NUMBERS HAVE NO
MATCH IN THE VEH DATA FILE **

XXXXXXXXXXXXX
YYYYYYYYYYYYY

Either or both of the above error message sequences will be absent in the event of no detected errors.

Program P8 Specific User Instructions

Both the input Vehicle data file (File Number 14) and the Vehicle descriptor card file (File Number 11) must be sorted into ascending order by Stock Number before run of Program P8.

Note that both of these sorts are accomplished within the executive STARTUP.

Program P8 Sample Run Output

The following represents sections of an actual run of Program P8. Content sufficient to illustrate the output message sequence has been maintained.

RUNP8

\$\$

INITILIZE OF VEHICLE DATA AND DESCRIPTOR FILES

| NUM | STOCK NUMBER | DESIGNATOR | DEVICE NOMENCLATURE |
|-----|---------------|------------|---|
| 1 | 6910LLC000468 | 12CD-17 | MATH, VECTOR ACCELERATION DEMONSTRATOR T/A |
| 2 | 6910LLC000469 | 12CD-18 | MATH, NOMOGRAPHIC PROJECTION DEMONSTRATOR T/A |
| 3 | 6910LLC000470 | 12CD-19 | MATH, PROJECTION, DEMONSTRATOR TRAINING AID |
| 4 | 6910LLC000471 | 12CD-21 | MATH, ORDER OF DIFFERENTIATION, DEM T/A |

... Output interrupted at this point ...

57 6940005271901 26A-11 ELECTRONICS FUNDAMENTALS UNITS EFU-1

*** DUPLICATE STOCK NUMBER ON PRECEEDING CARD
RECORD WILL BE IGNORED ***

| | | | |
|----|---------------|--------|---|
| 57 | 6940005271904 | 26A-11 | LABORATORY CIRCUIT ANALYSIS UNIT CAU-1 |
| 58 | 694000560627 | 26A-11 | VOLTAGE REGULATOR LAB CKT ANAL UNIT CAU-3 |
| 59 | 6940005723015 | 26A-11 | RADAR/MICROWAVE SYS CKT ANALYSIS UNIT CAU-5 |
| 60 | 6940005723018 | 26A-11 | SONAR LAB CIRCUIT ANALYSIS UNIT CAU-6 |
| 61 | 6940006641435 | 15Z1-1 | APS-T3, ULTRASONIC TRAINER |
| 62 | 6940007123047 | 26A-11 | TRANSISTOR LAB CIRCUIT ANALYSIS UNIT CAU-7 |
| 63 | 6940008506112 | 26A-11 | SYNCHRO LAB CKT ANALYSIS UNIT CAU-9 |

*** NOW AT EOF ON DATA CARD INPUT ***
A TOTAL OF 63 INPUT CARDS WERE READ

*** VEHICLE DIRECTORY HAS BEEN SUCCESSFULLY REWRITTEN

*** LOAD OF VEHICLE DESCRIPTOR FILE FOLLOWS ***

| STOCK NUMBER | DEVICE DESCRIPTORS |
|---------------|----------------------------|
| 6910LLC000468 | 03 11 21 32 45 52 61 71 81 |
| 6910LLC000469 | 03 11 21 32 45 52 61 71 81 |
| 6910LLC000470 | 03 11 21 32 45 52 61 71 81 |

... Output interrupted at this point ...

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...

| | | | | | | | | | |
|---------------|----|----|----|----|----|----|----|----|----|
| 694ØLLCØØ3443 | Ø5 | 11 | 21 | 32 | 42 | 52 | 61 | 71 | 81 |
| 694ØLLCØØ3445 | Ø5 | 11 | 21 | 32 | 42 | 52 | 61 | 71 | 81 |
| 694ØLLCØØ3447 | Ø5 | 11 | 21 | 32 | 42 | 52 | 61 | 71 | 81 |
| 694ØLLCØØ3448 | Ø5 | 11 | 21 | 32 | 42 | 52 | 61 | 71 | 81 |
| 694ØLLCØØ3449 | Ø5 | 11 | 21 | 32 | 42 | 52 | 61 | 71 | 81 |
| 694ØØØ52719Ø1 | Ø5 | 11 | 21 | 32 | 42 | 52 | 61 | 71 | 81 |
| 694ØØØ52719Ø4 | Ø5 | 11 | 21 | 32 | 42 | 52 | 61 | 71 | 81 |
| 694ØØØ56Ø6627 | Ø5 | 11 | 21 | 32 | 42 | 52 | 61 | 71 | 81 |
| 694ØØØ5723Ø15 | Ø5 | 11 | 21 | 32 | 42 | 52 | 61 | 71 | 81 |
| 694ØØØ5723Ø18 | Ø5 | 11 | 21 | 32 | 42 | 52 | 61 | 71 | 81 |
| 694ØØØ6641435 | Ø9 | 14 | 21 | 33 | 42 | 55 | 66 | 72 | 83 |
| 694ØØØ7123Ø47 | Ø5 | 11 | 21 | 32 | 42 | 52 | 61 | 71 | 81 |
| 694ØØØ85Ø6112 | Ø5 | 11 | 21 | 32 | 42 | 52 | 61 | 71 | 81 |

*** EOF REACHED ON DESCRIPTOR CARD INPUT FILE ***

| | |
|---|----|
| TOTAL NUMBER DESCRIPTOR CARDS INPUT : | 63 |
| TOTAL NUMBER UNIQUE VEHICLE STOCK NUMBERS : | 63 |
| TOTAL MATCHES FOUND IN VEHICLE DATA DIRECTORY : | 63 |

VEHICLE DATA/DIRECTORY/DESCRIPTOR LOAD PROGRAM
IS NOW TERMINATING

TAEG REPORT NO. 40

PROGRAM NAME : P8A

ENTRY POINT : IHECMS (Runtime Parameter Supplied by Executive RUNP8A at Entry)

RUN EXECUTIVES(S) : RUNP8A

USER OUTPUT VIA : Terminal, Offline Printer, or Both

USER PROMPTING : At Executive Level: (1) Output Device Select
(2) Print Option (A or B) Select

FUNCTION : Print Data Within or Associated With the Abbreviated Vehicle File (File Number 15)

| <u>Internal Filename (DDNAME)</u> | <u>Usage</u> | <u>Refer To File Reference Number</u> | <u>Media</u> | <u>External NCSS Filename/Filetype</u> | <u>Format</u> |
|---|--------------|---|--------------|--|---------------|
| SYSPRINT | OUTPUT | N/A : THIS IS THE OFFLINE PRINTER | | | FA, 121, 121 |
| MREF | INPUT | 1 | DASD | ETAM/MREF | F, 80, 80 |
| DIND | DIRECT | 3 | DASD | ETAM/DIND | F, 80, 80 |
| DVEH | INPUT | 16 | DASD | ETAM/DVEH | F, 750, 750 |
| VEHS | DIRECT | 15 | DASD | ETAM/VEHS | F, 80, 80 |

Discussion

The contents of the Abbreviated Vehicle data file are dumped to the online terminal of offline printer (or both) by use of Program P8A.

Listing of EXECUTIVE = RUNP8A

```

&TYPE OFF
&COMMENT G.P. PRINT EXEC FOR VEHICLES
&COMMENT ENTRY/DEVICE PROMPTS DONE HERE AND IN EXEC = DEVICE
&SPACE
&PRINT ABBR. VEHICLE FILE PRINT PROGRAM IS STARTING
&SPACE
&PRINT ENTER SINGLE CHARACTER OPTION (OR QUIT TO TERMINATE)
&PRINT A = PRINT ALL VEHICLE RECORDS IN SORTED ORDER
&PRINT B = LIST DESCRIPTORS ASSIGNED TO VEHICLE DATA
-STP1 &READ ARGS
&IF &1 EQ QUIT &QUIT
&ALPHA0 = &1
&IF &1 EQ A &GOTO -STP2
&IF &1 EQ B &GOTO -STP2
&SPACE
&PRINT UNABLE TO DETERMINE ENTRY TYPE - TRY AGAIN
&SPACE
&GOTO -STP1
-STP2 EXEC DEVICE
&ALPHA2 = &ALPHA0 !! &ALPHA1
-STP3 &SPACE
EXEC JCL
FILEDEF SYSPRINT PTR RE FA LR 121 BL 121
LOAD P8A (CLEAR LIBE) PLILIB
START INECMS &ALPHA2 (BRIEF)
FILEDEF * CLEAR
&EXIT

```

Program P8A Specific User Instructions

As shown in the samples to follow, the User will be prompted for both output device and type of output. The type of output is categorized by the following options in this program:

| <u>Option</u> | <u>Meaning</u> |
|---------------|--|
| A | Print the contents of each Abbreviated Vehicle file record. The order of output will be the natural order of the file, i.e., Vehicle Stock Number. |
| B | Print the descriptors associated with Vehicles. The data for this output is retrieved from the Descriptor Master Index file (File Number 3). |

NOTE - To print each of the Vehicle Stock Numbers and the actual descriptors assigned to each unique Stock Number, use the "V" Option of Program P20.

Program P8A Error Messages

The following error message results during Program P8A execution only in the event of a serious logic defect in the program:

** ERROR XX OCCURED ; NREC WAS YYYYY **

In the message, "XX" is the error number as explained below. The quantity "YYYYY" indicates the number of the input record on which the error was detected.

| <u>XX</u> | <u>Meaning</u> |
|-----------|--|
| 01 | While processing Print Option "B", an attempt was made to access a record that was outside the bounds of the Descriptor Master Index file (ETAM/DIND - File Number 3). Note that the maximum number of records present in File Number 3 is indicated in the fourth (subscript = 4) count in the Master Reference File ETAM/MREF. |
| 02 | During Print Option "A" processing, an attempt was made to access a record outside the bounds of the Vehicle data file. Master Reference file (subscript = 7) indicates the maximum record number used in the Vehicle data file (File Number 15). |

Program P8A Sample Run Output - Print Option "A"

The following listing is a portion of an actual run of Program P8 using Print Option "A".

RUNP8A

ABBR. VEHICLE FILE PRINT PROGRAM IS STARTING

ENTER SINGLE CHARACTER OPTION (OR QUIT TO TERMINATE)

A = PRINT ALL VEHICLE RECORDS IN SORTED ORDER

B = LIST DESCRIPTORS ASSIGNED TO VEHICLE DATA

A

OUTPUT TO GO TO TERMINAL, OFFLINE PRINTER, BOTH, OR QUIT?
ENTER TERM, PRTR, BOTH, OR QUIT

TERM

\$\$\$\$\$EXECUTION:

PAGE : 1

| ITEM | STOCK NUM | DESIGNATOR | DEVICE COST |
|------|---|------------|-------------|
| ---- | ----- | ----- | ----- |
| 1 | 6918LLC888468 | 12CD-17 | \$58.88 |
| | MATH, VECTOR ACCELERATION DEMONSTRATOR T/A | | |
| 2 | 6918LLC888469 | 12CD-18 | \$2,888.88 |
| | MATH, NOMOGRAPHIC PROJECTION DEMONSTRATOR T/A | | |
| 3 | 6918LLC888478 | 12CD-19 | \$1,588.88 |
| | MATH, PROJECTION, DEMONSTRATOR TRAINING AID | | |
| 4 | 6918LLC888471 | 12CD-21 | \$1,888.88 |
| | MATH, ORDER OF DIFFERENTIATION, DEM T/A | | |
| 5 | 6918LLC888472 | 12CD-22 | \$18.88 |
| | MATH, FINITE ROTATION, DEMONSTRATOR T/A | | |
| 6 | 6918LLC888473 | 12CD-24 | \$58.88 |
| | MATH, DIRECTION COSINE, DEMONSTRATOR T/A | | |
| 7 | 6918LLC888474 | 12CD-25 | \$1,588.88 |
| | MATH, SKEW LINE, DEMONSTRATOR TRAINING AID | | |
| 8 | 6918LLC888988 | 3E34-1 | \$1,828.88 |
| | 186MM RECOILLESS RIFLE, FIRING MECH. TRANSP. | | |

... Output terminated at this point ...

Program P8A Sample Run Output - Print Option "B"

Using Print Option "B", the following represents a sample of the resulting output of Program P8A.

RUNP8A

ABBR. VEHICLE FILE PRINT PROGRAM IS STARTING

ENTER SINGLE CHARACTER OPTION (OR QUIT TO TERMINATE)

A = PRINT ALL VEHICLE RECORDS IN SORTED ORDER

B = LIST DESCRIPTORS ASSIGNED TO VEHICLE DATA

B

OUTPUT TO GO TO TERMINAL, OFFLINE PRINTER, BOTH, OR QUIT?

ENTER TERM, PRTR, BOTH, OR QUIT

TERM

\$\$EXECUTION:

PAGE : 1

-- VEHICLES

*** VEHICLE TYPES

Ø1 INSTRUCTOR

Ø2 STATIC GRAPHICS

Ø3 ANIMATED GRAPHICS

Ø4 AUDIO

Ø5 PHYSICAL MODELS

Ø6 PROCEDURAL TRAINERS: SYMBOLIC

Ø7 PROCEDURAL TRAINERS: PHYSICAL BUT NON-FUNCTIONAL

Ø8 PROCEDURAL TRAINERS: FUNCTIONAL

Ø9 TASK & SYSTEM SIMULATORS

1Ø REAL EQUIPMENT ITSELF

*** CLASS OF TRAINING OBJECTIVE

11 REFERENCE KNOWLEDGE

12 KNOWLEDGE, TASK SPECIFIC/ENABLING

13 TASK-SKILL FORMATS

14 SKILL TRAINING

*** VEHICLE PROPERTIES

21 VISUAL

22 AUDITORY

23 KINESTHETIC/VESTIBULAR

24 TACTILE

*** TYPE OF CONTENT DISPLAYED

- 31 TEXT-VERBAL
- 32 DIAGRAMMATIC
- 33 ABSTRACTED PICTORIAL REPRESENTATION
- 34 PICTORIAL REPRESENTATIONS
- 35 PHYSICAL REPRESENTATIONS
- 36 OTHER

*** TYPE OF PRESENTATIONAL SEQUENCE

- 41 LIBRARY OF FRAMES OR ITEMS
- 42 PRESENTATION SEQUENCE NOT APPLICABLE
- 43 FIXED SEQUENTIAL FRAMES OR ITEMS
- 44 RANDOM SELECTION OF FRAME SEQUENCES
- 45 DYNAMIC CHANGE OF CONTENT WITHIN FRAME

*** SELECTION SOURCE FOR SEQUENCING

- 51 INTERNAL PROGRAM
- 52 INSTRUCTOR
- 53 STUDENT CHOICE
- 54 STUDENT PERFORMANCE
- 55 COMBINATIONS OF THE ABOVE

*** TYPE OF EXTERNAL CONTROL OPERATED BY STUDENT

- 61 NOT APPLICABLE DIRECTLY
- 62 ARTIFICIAL OR SYMBOLIC RESPONSE
- 63 REPRESENTATIONAL RESPONSE BY SYMBOLIC SELECTION
- 64 REPRESENTATIONAL RESPONSE BY DUMMY CONTROL ACTIVATION
- 65 TASK-MANIPULATIVE RESPONSE, NON-DYNAMIC IN TIME AND FORCE

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66 TASK-MANIPULATIVE RESPONSE, DYNAMIC AND INTERACTIVE

*** FEEDBACK PRESENTATION LOGIC

- 71 NOT APPLICABLE
- 72 SELECTS NEXT STIMULUS ITEM OR SEQUENCE
- 73 GIVES EVALUATION OF PRECEDING RESPONSE
- 74 SELECTS AND PRESENTS GUIDANCE INFO

*** RESPONSE EVALUATION LOGIC

- 81 NOT INTERNAL-DEPENDS ON INSTRUCTOR OR STUDENT EVALUATION
- 82 EVALUATION LIMITED TO STUDENT'S IMMEDIATE RESPONSE
- 83 EVALUATION EXTENDED TO A SET OF STUDENT RESPONSES
- 84 TOLERANCE LIMITS ON ACCEPTABLE STUDENT RESPONSE: FIXED
- 85 TOLERANCE LIMITS ON ACCEPTABLE STUDENT RESPONSE: VARIABLE

PROGRAM NAME : P9

ENTRY POINT : P9

RUN EXECUTIVES(S) : RUNP9

USER OUTPUT VIA : Terminal, Offline Printer, or Both

USER PROMPTING : Program Level : Output Device Select

FUNCTION : Makeup Task Abbreviated Data File, Directory, and
Descriptor File (File Numbers 22, 23, and 19, incl.)

| <u>Internal Filename (DDNAME)</u> | <u>Usage</u> | <u>Refer To File Reference Number</u> | <u>Media</u> | <u>External NCSS Filename/Filetype</u> | <u>Format</u> |
|---|--------------|---|--------------|--|---------------|
| SYSPRINT | OUTPUT | N/A : THIS IS THE OFFLINE PRINTER | | | FA, 121, 121 |
| MREF | INOUT | 1 | DASD | ETAM/MREF | F, 80, 80 |
| DIND | DIRECT | 3 | DASD | ETAM/DIND | F, 80, 80 |
| TDATA | INPUT | 21 | DASD | ETAM/STDATA | F, 80, 80 |
| TCDESC | INPUT | 18 | DASD | ETAM/STDSCR | F, 80, 80 |
| DTASK | OUTPUT | 23 | DASD | ETAM/DTASK | F, 1500, 1500 |
| TASKS | OUTPUT | 22 | DASD | ETAM/TASKS | F, 80, 80 |
| TDESC | OUTPUT | 19 | DASD | ETAM/TDESC | F, 213, 213 |

Discussion

Program P9 serves to generate all three files of the Abbreviated Tasks data base. This includes the data file (File Number 22), the Tasks Directory (File Number 23), and the Tasks Descriptor file (File Number 19).

Listing of EXECUTIVE = RUNP9

```

&TYPE OFF
&COMMENT LOAD TASK DATA/DIRECTORY/DESCRIPTORS
&COMMENT NO EXEC ENTRY PARMS
&COMMENT PROGRAM P9 WILL PROMPT FOR OUTPUT DEVICE,
&COMMENT TERMINAL, OFFLINE PRINTER, BOTH, QUIT.
FILEDEF MREF DSK ETAM MREF RE F LR 80
FILEDEF DIND DSK ETAM DIND RE F LR 80 BL 80
FILEDEF TDATA DSK ETAM STDATA RE F LR 80 BL 80
FILEDEF TDESC DSK ETAM STDSCR RE F LR 80 BL 80
FILEDEF DTASK DSK ETAM DTASK RE F LR 1500 BL 1500
FILEDEF TASKS DSK ETAM TASKS RE F LR 80 BL 80
FILEDEF TDESC DSK ETAM TDESC RE F LR 213 BL 213
FILEDEF SYSPRINT PTR RE FA LR 121 BL 121
LOAD P9 (CLEAR LIBE) PLILIB
START (BRIEF)
FILEDEF * CLEAR
&EXIT

```

Program P9 Error Messages

Within the data input card deck (File Number 21), a given Rate/Rank/Jobtask Number cannot be duplicated on more than one card. Since this file is sorted by the contents of these data fields, duplicates can be detected by Program P9. In such a case, the following error message text will be output:

```

** DUPLICATE STOCK NUMBER ON PRECEEDING CARD RECORD
   WILL BE IGNORED **

```

Program P9 verifies the legality of each of the descriptors in the descriptor input file (File Number 18). The Master Descriptor Index (File Number 3) is used for this purpose. If an error is detected, the following message is output:

```

** ERROR IN TASK NUMBER -XXX YY ZZZZ- DESCRIPTOR
   SUBSCRIPT SSS DOES NOT EXIST **

```

where "XXX" is the Task Rate, "YY" the Rank, and "ZZZZ" the Jobtask number.

Since both the Task data cards and descriptor cards are input to Program P9, it is possible for a discrepancy to exist within the key fields of each (first 13 characters of each card - includes Rate, Rank, and Jobtask number). If such discrepancies are detected, the occurrence is saved within the Program and the messages illustrated below will be printed following the message signifying end-of-file on the descriptor card input.

** THE FOLLOWING DATA FILE TASK NUMBERS
HAVE NO MATCH IN THE DESCRIPTOR CARD FILE **

XXX XXXXXXXXXXXXX
XXX XXXXXXXXXXXXX
... Etc.

and/or the following

** THE FOLLOWING DESCRIPTOR CARD TASK NUMBERS
HAVE NO MATCH IN THE DATA FILE **

YYY YYYYYYYYYYYYYY
YYY YYYYYYYYYYYYYY

Either or both of the above error message sequences will be absent in the event of no detected errors.

Program P9 Specific User Instructions

Both input files - the data file (File Number 21) and the descriptor input file (File Number 18) must be sorted into ascending order by the first 13 characters of each record before run of Program P9.

Note that both of the required sorts are accomplished within the executive STARTUP.

Program P9 Sample Run Output

The following represents sections of an actual run of Program P9. Content sufficient to illustrate the output message sequence has been maintained.

RUNP9

\$\$\$

TASK DATA/DIRECTORY/DESCRIPTOR LOAD PROGRAM IS NOW STARTING

OUTPUT TO GO TO TERMINAL, OFFLINE PRINTER, OR BOTH?

ENTER TERM, PRTR, BOTH, OR QUIT

_TERM

** LOAD OF TASK ABBREVIATED DATA FILE FOLLOWS

| <u>NUMBER</u> | <u>RATE</u> | <u>RANK</u> | <u>TASK</u> | <u>TASK TITLE</u> |
|---------------|-------------|-------------|-------------|--|
| 1 | AN | | 20350 | AIRCRAFT UNDER EMERGENCY CONDITIONS |
| 2 | AN | | 20351 | IDENTIFY MARKINGS INDICATING DANGEROUS AREAS |
| 3 | AN | | 20352 | IDENTIFY TOXIC PROPERTIES OF CLEANING MATERIALS |
| 4 | AN | | 20368 | RECOGNIZE ARMED EJECTION SEATS |
| 5 | AN | | 24425 | HANDLE AIRCRAFT BATTERIES |
| 6 | AN | | 25352 | KNOW NAVAL AIR ARM GENERAL ORGANIZATION |
| 7 | AN | | 25353 | IDENTIFY NAMES, FUNCTIONS OF NAVAL AIR GROUPS |
| 8 | AN | | 25354 | IDENTIFY NAVAL AIRCRAFT SQUADRONS |
| 9 | AN | | 42353 | STAND AIRCRAFT SECURITY WATCH |

... Output interrupted at this point ...

The above text will be followed by:

** EOF ON DATA INPUT FILE
CARDS PROCESSED : XX,XXX **

** LOAD OF TASK DESCRIPTOR CARDS FOLLOWS **

(Followed by print of Task Descriptor Cards)

** EOF REACHED ON TASK DESCRIPTOR INPUT FILE
CARDS PROCESSED : XX,XXX **

PROGRAM NAME : P9A

ENTRY POINT : IHECMS (Execution Parameter Supplied by Executive
RUNP9A at Entry)

RUN EXECUTIVES(S) : RUNP9A

USER OUTPUT VIA : Terminal, Offline Printer, or Both

USER PROMPTING : At Executive Level: (1) Output Device Select
(2) Print Option Select

FUNCTION : Print Data Within or Associated with the Abbreviated
Tasks File (File Number 22)

| <u>Internal Filename (DDNAME)</u> | <u>Usage</u> | <u>Refer To File Reference Number</u> | <u>Media</u> | <u>External NCSS Filename/Filetype</u> | <u>Format</u> |
|---|--------------|---|--------------|--|---------------|
| MREF | INPUT | 1 | DASD | ETAM/MREF | F, 80, 80 |
| DIND | DIRECT | 3 | DASD | ETAM/DIND | F, 80, 80 |
| DTASK | INPUT | 23 | DASD | ETAM/DTASK | F, 1500, 1500 |
| TASKS | DIRECT | 22 | DASD | ETAM/TASKS | F, 80, 80 |
| SYSPRINT | OUTPUT | N/A : THIS IS THE OFFLINE PRINTER | | | FA, 121, 121 |

Discussion

Program P9A to printer dump the contents of the Abbreviated Tasks data file (File Number 22). At User option, the dump may be directed to either (or both) the online terminal or the offline printer.

Listing of EXECUTIVE = RUNP9A

```

&TYPE OFF
&COMMENT G.P. PRINT EXEC FOR TASKS
&COMMENT ENTRY/DEVICE PROMPTS DONE HERE AND IN EYEC = DEVICE
&SPACE
&PRINT ABBR. TASKS FILE PRINT PROGRAM IS STARTING
&SPACE
&PRINT ENTER SINGLE CHARACTER OPTION (OR QUIT TO TERMINATE)
&PRINT A = PRINT ALL TASK RECORDS IN SORTED ORDER
&PRINT B = LIST DESCRIPTORS ASSIGNED TO TASK DATA

```

```

-STP1 &READ ARGS
      &IF &1 EQ QUIT &QUIT
      &ALPHA0 = &1
      &IF &1 EQ A &GOTO -STP2
      &IF &1 EQ B &GOTO -STP2
      &SPACE
      &PRINT UNABLE TO DETERMINE ENTRY TYPE - TRY AGAIN
      &SPACE
      &GOTO -STP1
-STP2 EXEC DEVICE
      &ALPHA2 = &ALPHA0 !! &ALPHA1
-STP3 &SPACE
EXEC JCL
FILEDEF SYSPRINT PTR RE FA LR 121 BL 121
LOAD P9A (CLEAR LIBE) PLILIB
START THECMS &ALPHA2 (BRIEF)
FILEDEF * CLEAR
&EXIT

```

Program P9A Specific User Instructions

As shown in the samples to follow, the User is prompted to select the output device and the type of output. Within Program P9A, the following output options are available:

| <u>Option</u> | <u>Meaning</u> |
|---------------|----------------|
|---------------|----------------|

- | | |
|---|--|
| A | Print the contents of the Abbreviated Tasks file. The order of the output will be the natural order of the file, i.e., by the contents of the 13-character field containing the concatenation of Rate, Rank, and Jobtask Number. |
| B | Print the descriptors associated with Tasks. The data for this output is retrieved from the Descriptor Master Index file (File Number 3). |

NOTE - To command the print of the actual descriptors assigned to each unique task, use the "T" Option of Program P20.

Program P9A Error Messages

The following error text can be generated by Program P9A:

** ERROR XX OCCURED ; NREC WAS YYYYY **

In the above message, "XX" is the error number as explained below. The quantity "YYYYY" indicates the number of the input record that was being processed when the error was detected.

| <u>XX</u> | <u>Meaning</u> |
|-----------|----------------|
|-----------|----------------|

- | | |
|----|--|
| 01 | During processing of Print Option "B", an attempt was made to read a record that was outside the bounds of the Descriptor Master Index file (ETAM/DIND - File Number 3). The Master Reference file (ETAM/MREF - File Number 1) indicates the maximum number of records available in the ETAM/DIND file. This count is available in the fourth (subscript = 4) count of MREF. |
| 02 | While processing Print Option "A", an attempt was made to access a record outside the bounds of the Tasks data file (File Number 22). The Master Reference file (subscript = 11) indicates the maximum record number that can be accessed in the Tasks data file. |

Program P9A Sample Run Output - Print Option "A"

The following listing is an example of the output that results from selection of Print Option "A".

RUNP9A

ABBR. TASKS FILE PRINT PROGRAM IS STARTING

ENTER SINGLE CHARACTER OPTION (OR QUIT TO TERMINATE)

A = PRINT ALL TASK RECORDS IN SORTED ORDER

B = LIST DESCRIPTORS ASSIGNED TO TASK DATA

A

OUTPUT TO GO TO TERMINAL, OFFLINE PRINTER, BOTH, OR QUIT?

ENTER TERM, PRTR, BOTH, OR QUIT

TERM

\$EXECUTION:

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| ITEM | RATE | RANK | TASK | COST-PER-BILLET |
|------|-------|------|--|-----------------|
| ---- | ----- | ---- | ----- | ----- |
| 1 | AN | | 20350 AIRCRAFT UNDER EMERGENCY CONDITIONS | \$0.00 |
| 2 | AN | | 20351 IDENTIFY MARKINGS INDICATING DANGEROUS AREAS | \$0.00 |
| 3 | AN | | 20352 IDENTIFY TOXIC PROPERTIES OF CLEANING MATERIALS | \$0.00 |
| 4 | AN | | 20368 RECOGNIZE ARMED EJECTION SEATS | \$0.00 |
| 5 | AN | | 24425 HANDLE AIRCRAFT BATTERIES | \$0.00 |
| 6 | AN | | 25352 KNOW NAVAL AIR ARM GENERAL ORGANIZATION | \$0.00 |
| 7 | AN | | 25353 IDENTIFY NAMES, FUNCTIONS OF NAVAL AIR GROUPS | \$0.00 |

... Output terminated at this point ...

Program P9A Sample Run Output - Print Option "B"

The following is a sample of the output (complete) from Program P9A that results from Print Option "B" selection.

RUNP9A

ABBR. TASKS FILE PRINT PROGRAM IS STARTING

ENTER SINGLE CHARACTER OPTION (OR QUIT TO TERMINATE)

A = PRINT ALL TASK RECORDS IN SORTED ORDER

B = LIST DESCRIPTORS ASSIGNED TO TASK DATA

B

OUTPUT TO GO TO TERMINAL, OFFLINE PRINTER, BOTH, OR QUIT?

ENTER TERM, PRTR, BOTH, OR QUIT

TERM

\$EXECUTION:

PAGE : 1

-- TASKS

*** ADMINISTRATIVE ROUTINE PAPERWORK

Ø1 FORMS FILLING

Ø2 DOCUMENT-FILE MANAGEMENT

Ø3 DECODE-ENCODE

Ø4 SCREEN-FILTER DISTRIBUTE

Ø5 OTHER

*** ADMINISTRATIVE NON-ROUTINE PAPERWORK

11 CONSTRUCT MESSAGES-REPORTS

12 ANALYZE-INTERPRET

13 CONSTRUCT RECOMMENDATION-PROPOSAL

14 CONSTRUCT PLAN

15 OTHER

*** ADMINISTRATIVE OFFICE EQUIPMENT OPERATION

21 TYPEWRITER

22 TELEPHONE, ETC.

23 REPRODUCER

24 COMPUTER TERMINAL

25 TELETYPE

26 OTHER

*** INTERPERSONAL: INFORM-INSTRUCT-MANAGE

- 31 BRIEF-DEBRIEF
- 32 INSTRUCT-TRAIN
- 33 ASSIGN, MONITOR, COORDINATE
- 34 EVALUATE
- 35 OTHER

*** TECHNICAL PROCEDURES

- 41 SEQUENTIAL
- 42 STRATEGIC, ADAPTIVE
- 43 INTERPERSONAL, TEAM MEMBER
- 44 OTHER

*** TECHNICAL TYPE OF PROCEDURE(MAIN EMPHASIS)

- 51 SCAN-DETECT: SYMBOLIC (INCL. MAPS, RADAR, TRANSDUCED SIGNALS)
- 52 SCAN-DETECT: NATURAL
- 53 IDENTIFY: SYMBOLIC(INCL. TRANSDUCED SIGNALS)
- 54 IDENTIFY: NATURAL
- 55 INTERPRET:SYMBOLIC
- 56 INTERPRET: NATURAL
- 57 PERCEPTUAL-MOTOR
- 58 COGNITIVE OPERATIONS
- 59 MANUAL
- 60 COMMUNICATE

*** TECHNICAL WITH OR WITHOUT EQUIPMENT

- 61 WITH EQUIPMENT (PAPER IS EQUIPMENT)
- 62 WITHOUT EQUIPMENT

*** TECHNICAL DECIDE

- 71 DIAGNOSE-ANALYZE

PAGE : 2

- 72 SELECT-CHOOSE
- 73 UNDER STRESS OR LOAD
- 74 OTHER

*** TECHNICAL CONSTRUCT-REPAIR, PLAN

- 81 MANUAL CONSTRUCT OR REPAIR
- 82 COGNITIVE CONSTRUCT, PLAN

*** TECHNICAL TRACK-AIM-STEER

- 91 APPLICABLE
- 92 TIME STRESS
- 93 INFORMATION-LOAD STRESS

TAEG REPORT NO. 40

PROGRAM NAME : P14

ENTRY POINT : P14

RUN EXECUTIVES(S) : RUNP14

USER OUTPUT VIA : Terminal Only

USER PROMPTING : Executive Level Only

FUNCTION : Extract Abbreviated Course File Data from the NITRAS
MCRF Extract Tape

| <u>Internal Filename (DDNAME)</u> | <u>Usage</u> | <u>Refer To File Reference Number</u> | <u>Media</u> | <u>External NCSS Filename/Filetype</u> | <u>Format</u> |
|---|--------------|---|--------------|--|---------------|
| NITRAS | INPUT | 24 | Tape | Not Applicable | FB, 810, 3240 |
| DESCR | INPUT | 5 | DASD | ETAM/SCDESC | Card Image |
| COURSE | OUTPUT | 7 | DASD | ETAM/COURSE | Card Image |

Discussion

This program constructs the Abbreviated Course data base. Using the CIN numbers as indicated on the input descriptor cards (File Number 5, above), matching data is sought on the NITRAS MCRF extract tape. If a match occurs, the data is selected from the NITRAS tape.

If a CIN number remains unmatched on a descriptor card, a message is output to indicate the missing data. Samples of this condition follow.

Listing of EXECUTIVE = RUNP14

```

&TYPE OFF
&COMMENT MAKEUP OF ABBR. COURSE DATA BASE.
&COMMENT NO ENTRY PARMS.
&COMMENT NITRAS TAPE MUST BE MOUNTED PRIOR TO INVOCATION
&COMMENT OF THIS EXEC.
&SPACE
&PRINT IS NITRAS TAPE ALREADY MOUNTED AND MOUNT VERIFIED?
-STP1 &PRINT RESPOND YES OR NO
&SPACE
&READ ARGS
&IF &1 EQ YES &GOTO -YES
&IF &1 EQ NO &GOTO -NO
&PRINT UNABLE TO DETERMINE LAST ENTRY TYPE - TRY AGAIN
&SPACE
&GOTO -STP1
-NO &PRINT COMPLETE PROCEDURE FOR NITRAS TAPE MOUNT, AND
&PRINT INVOKE EXECUTIVE RUNP14 AGAIN.
-FIN &SPACE
&PRINT EXECUTIVE RUNP14 IS NOW TERMINATING
-OUT &SPACE
&QUIT
-YES &SPACE
TAPEIO FSF TAP2
&IF &INDEX0 EQ 0 &GOTO -RUNIT
&PRINT TAPE FORWARD FILE SKIP BROKE; RETURN CODE WAS &INDEX0
&GOTO -FIN
-RUNIT FILEDEF NITRAS TAP2 RE FB LR 810 BL 3240 DEN 3
FILEDEF DESCR DSK ETAM SDESC RE F LR 80 BL 80
FILEDEF COURSE DSK ETAM COURSE2 RE F LR 80 BL 80
LOAD P14 (CLEAR LIBE) PLILIB
START (BRIEF)
FILEDEF * CLEAR
&EXIT

```

Program P14 Error Messages

The only error of significance in this module results after reaching an end-of-file on the NITRAS tape, when more (one/more) descriptor cards remain to be read. An instance of this is shown in the sample output below. The error message follows the normal EOF ON NITRAS-TAPE INPUT message for CIN number 83000010.

Program P14 Sample Run Output

The following represents an execution of Program P14. Only a cut of the output is shown in the interest of brevity. For a listing of the contents of the actual Course Abbreviated data base, see the output listings that have resulted from Program P7B output.

RUNP14

\$\$

ABBREVIATED COURSE DATA BASE EXTRACT PROGRAM

DATE : 04/18/77

TIME : 1350

| DESCRIPTOR CARD NUM | CIN COUNT | CIN | NITRAS REC NUM | COURSE CDP | COURSE SHORT TITLE |
|------------------------|--------------|----------|--------------------------|----------------------|--|
| 1 | 1 | A 000111 | 13 | 0327 | SWO ADV COMMAND |
| 2 | 2 | A1010108 | 213 214 215 | 516U 5535 7654 | WRA-4 CMB MA WRA-4 CMB /FINIS WRA-4 CMB MA |
| 3 *** | 3 | A1020060 | - NO CIN MATCH IN NITRAS | | |
| 4 *** | 4 | A1020093 | - NO CIN MATCH IN NITRAS | | |
| 5 *** | 5 | A1020095 | - NO CIN MATCH IN NITRAS | | |
| 6 | 6 | A1930050 | 794 2213 | INERT NAV PRINC | |
| 7 | 7 | A 2E0013 | 881 0303 | TAL PCO/PXO ORI | |
| ETC ... | | | | | |

** EOF ON NITRAS-TAPE INPUT **

132 *** 121 83000010 - NO CIN MATCH IN NITRAS -

* ** EOF ON CARD-DESCRIPTOR INPUT **

132 : TOTAL DESCRIPTOR CARDS READ
 121 : TOTAL CIN NUMBERS INPUT
 50 : TOTAL CIN ERRORS (NO MATCH IN NITRAS)
 111 : TOTAL COURSES ECTRACTED
 4,127 : LAST RECORD READ IN NITRAS

Program P14 Specific User Instructions

In regards the NITRAS MCRF Extract Tape:

- * The tape must be in the format shown in the File Section for File Number 24.
- * The tape must be sorted into ascending order by CIN number, by CDP number. If an IBM sort package is used for this purpose on the 360/370 Series IBM computers, the following OS SORT control card is required:

SORT FIELDS=(5,8,CH,A,1,4,CH,A),FILSZ=E5000

- * When the tape has been posted to the NCSS time-sharing vendor's computer site, have the local NCSS Representative obtain a NCSS tape library "Bin Number" for the tape.
- * When ready to process the tape, precede the RUNP14 executive command by the following online terminal entry:

MOUNT TAPE binnumber AS TAP2 RINGOUT

Wait for a response from the NCSS I/O Operator. before proceeding with execution of RUNP14.

- * RUNP14 executive presumes a Standard-Label OS tape; a forward-skip file is executed to pass over the volume identification and data set label. This is accomplished in RUNP14 EXEC line:

TAPEIO FSF TAP2

If a non-labeled tape is to be processed, a change must be made to the executive.

TAEG REPORT NO. 40

PROGRAM NAME : P16

ENTRY POINT : P16

RUN EXECUTIVES(S) : RUNP16

USER OUTPUT VIA : Terminal Only

USER PROMPTING : None

FUNCTION : Construct Descriptor Master Index File (File Number 3)

| <u>Internal Filename (DDNAME)</u> | <u>Usage</u> | <u>Refer To File Reference Number</u> | <u>Media</u> | <u>External NCSS Filename/Filetype</u> | <u>Format</u> |
|---|--------------|---|--------------|--|---------------|
| MREF | INOUT | 1 | DASD | ETAM/MREF | F, 80, 80 |
| DIND | OUTPUT | 3 | DASD | ETAM/DIND | F, 80, 80 |
| CARDS | INPUT | 2 | DASD | ETAM/DICRDS | F, 80, 80 |

Discussion

The Descriptor Master Index (File Number 3) contains card-image records in the following sequence:

| <u>Record Number</u> | <u>Contents</u> |
|--------------------------|---|
| 0 | Header record, containing 40 binary halfword counts. Count(1) is the zero-origin maximum record number in the file (last record position used). |
| 1 - 4 | Course index contents; these cards will be read into the PL/1 structure called DINDEX. |
| 5 - 8 | Vehicle index contents; same comments as above. |
| 9 - 12 | Task index contents; same comments as above. |
| 13 - N1 | Card records as read from the input file (File Number 2) descriptive of Course type descriptors. |
| (N1+1) - N2 | Vehicle descriptor cards. |
| (N2+1) - N3 | Task descriptor cards; end-of-file follows. |

Listing of EXECUTIVE = RUNP16

```

&TYPE OFF
&COMMENT MAKEUP OF MASTER DESCRIPTOR INDEX (DIND)
&COMMENT NO ENTRY PARMS
FILEDEF CARDS DSK ETAM DICRDS RE F LR 80 BL 80
FILEDEF MREF DSK ETAM MREF RE F LR 80 BL 80
FILEDEF DIND DSK ETAM DIND RE F LR 80 BL 80
LOAD P16 (CLEAR LIBE) PLILIB
START (BRIEF)
FILEDEF CARDS CLEAR
FILEDEF MREF CLEAR
FILEDEF DIND CLEAR
&EXIT

```

Program P16 Error Messages

The following general error message sequence can result from errors detected in the run of P16:

**** ERROR NUMBER X HAS OCCURED ****
 (Followed by descriptive line)

(Followed by the two standard terminus messages - as shown on the sample run)

In the message first line, X has the following significance; X also determines the exact contents of the message second line.

| <u>Number X</u> | <u>Message Second Line</u> |
|-----------------|--|
| 1 | FIRST CARD NOT (--) CARD |
| 2 | DUPLICATE (--) CARD |
| 3 | TYPE OF (--) CARD INVALID |
| 4 | TYPE (**) CARD MUST FOLLOW TYPE (--) |
| 5 | CATEGORY HAS NO DESCRIPTORS |
| 6 | DESCRIPTOR NUMBER CONVERSION ERROR |
| 7 | CATEGORY TABLE SIZE EXCEEDED, MAX = 15 |

Program P16 Sample Error Message

** ERROR NUMBER 2 HAS OCCURED **
DUPLICATE (--) CARD

** TOTAL DESCRIPTOR INDEX CARDS READ : 44

MASTER DESCRIPTOR INDEX PROCESSING IS NOW TERMINATING

Program P16 Sample Run Output

The following represents an actual run of P16. The output is shown in its entirety; this represents the contents of the Descriptor Index in the current ETAM implementation.

RUNP16

\$\$\$\$\$

MASTER DESCRIPTOR INDEX CONSTRUCT PROGRAM IS NOW STARTING

DESCRIPTOR CARD FILE LISTING FOLLOWS

-- COURSES

*** REFERENCE KNOWLEDGE

- Ø1 SYSTEM PURPOSES
- Ø2 ORGANIZATIONAL ROLES
- Ø3 CONTEXTS OF OPERATION
- Ø4 ORGANIZATIONAL RULES
- Ø5 OTHER

*** ENABLING KNOWLEDGE

- 1Ø OPERATIONAL GOAL CRITERIA
- 11 NOMENCLATURE, IDENTIFICATION, LOCATION
- 12 PROCEDURAL DESCRIPTIONS
- 13 JOB RELEVANT FACTS, RULES
- 14 OTHER

*** TASK FORMATS

- 2Ø PROCEDURE FORMATS
- 21 DECISION FORMATS
- 22 CONSTRUCTION FORMATS
- 23 OTHER

*** CROSS JOB CATEGORIES

- 3Ø OPERATIONS
- 31 MAINTENANCE
- 32 SERVICE & ADMINISTRATION
- 33 COMMAND
- 34 OTHER

::: OBJECTIVE TASK VARIABLES AS MANIFEST IN THE TRAINING

40 EQUIPMENT & OBJECTS USED: REAL
 41 EQUIPMENT & OBJECTS USED: SIMULATED
 42 EQUIPMENT & OBJECTS USED: SYMBOLIC
 43 ENVIRONMENTS IN WHICH TASK IS TRAINED: REAL
 44 ENVIRONMENTS IN WHICH TASK IS TRAINED: SIMULATED
 45 ENVIRONMENTS IN WHICH TASK IS TRAINED: SYMBOLIC
 46 TOOLS/INSTRUMENTS USED IN TRAINING: REAL
 47 TOOLS/INSTRUMENTS USED IN TRAINING: SIMULATED
 48 TOOLS/INSTRUMENTS USED IN TRAINING: SYMBOLIC
 49 REF/ENABLING INFO IN DOING TASK: APPLIED
 50 REF/ENABLING INFO IN DOING TASK: NOT APPLIED
 51 CRITERIA OF TASK PERFORMANCE: REAL
 52 CRITERIA OF TASK PERFORMANCE: SIMULATED
 53 CRITERIA OF TASK PERFORMANCE: SYMBOLIC

::: TASK FUNCTIONS DOMINANT IN TRAINING

60 GOAL PROJECTION
 61 SCAN-DETECT
 62 IDENTIFY
 63 INTERPRET
 64 PROCEDURE FOLLOWING
 65 DECIDE
 66 CONSTRUCT, PLAN
 67 TRACK
 68 MOTOR PERFORMANCE
 69 INTERPERSONAL INTERACTION
 70 RECALL TASK-CYCLE INFORMATION
 71 RECALL ENABLING INFORMATION
 72 ADAPT IMPROVISATIONALLY/IMPROMPTU
 73 OTHER

::: STAGE OF LEARNING

80 ORIENTATION, FAMILIARIZATION
 81 TASK NOMENCLATURE, IDENTs, LOCATIONS, FACTS, RULES
 82 TASK FORMATS AT CONCEPTUAL LEVEL
 83 PROCEDURES AT VERBAL LEVEL ONLY
 84 TASK COMPONENTS WITH GUIDANCE
 85 ENTIRE JOB-TASK PROCEDURALLY AT BARELY ACCEPTABLE MASTERY
 86 HIGHLY PROFICIENT IN WORK CONTEXT
 87 UNUSUAL TASK CONDITIONS
 88 PERFORMANCE AT KEY MAN LEVEL
 89 REFRESHER LEARNING

-- VEHICLES

::: VEHICLE TYPES

01 INSTRUCTOR
 02 STATIC GRAPHICS

- Ø3 ANIMATED GRAPHICS
- Ø4 AUDIO
- Ø5 PHYSICAL MODELS
- Ø6 PROCEDURAL TRAINERS: SYMBOLIC
- Ø7 PROCEDURAL TRAINERS: PHYSICAL BUT NON-FUNCTIONAL
- Ø8 PROCEDURAL TRAINERS: FUNCTIONAL
- Ø9 TASK & SYSTEM SIMULATORS
- 1Ø REAL EQUIPMENT ITSELF

- *** CLASS OF TRAINING OBJECTIVE
- 11 REFERENCE KNOWLEDGE
- 12 KNOWLEDGE, TASK SPECIFIC/ENABLING
- 13 TASK-SKILL FORMATS
- 14 SKILL TRAINING

- *** VEHICLE PROPERTIES
- 21 VISUAL
- 22 AUDITORY
- 23 KINESTHETIC/VESTIBULAR
- 24 TACTILE

- *** TYPE OF CONTENT DISPLAYED
- 31 TEXT-VERBAL
- 32 DIAGRAMMATIC
- 33 ABSTRACTED PICTORIAL REPRESENTATION
- 34 PICTORIAL REPRESENTATIONS
- 35 PHYSICAL REPRESENTATIONS
- 36 OTHER

- *** TYPE OF PRESENTATIONAL SEQUENCE
- 41 LIBRARY OF FRAMES OR ITEMS
- 42 PRESENTATION SEQUENCE NOT APPLICABLE
- 43 FIXED SEQUENTIAL FRAMES OR ITEMS
- 44 RANDOM SELECTION OF FRAME SEQUENCES
- 45 DYNAMIC CHANGE OF CONTENT WITHIN FRAME

- *** SELECTION SOURCE FOR SEQUENCING
- 51 INTERNAL PROGRAM
- 52 INSTRUCTOR
- 53 STUDENT CHOICE
- 54 STUDENT PERFORMANCE
- 55 COMBINATIONS OF THE ABOVE

- *** TYPE OF EXTERNAL CONTROL OPERATED BY STUDENT
- 61 NOT APPLICABLE DIRECTLY
- 62 ARTIFICIAL OR SYMBOLIC RESPONSE
- 63 REPRESENTATIONAL RESPONSE BY SYMBOLIC SELECTION
- 64 REPRESENTATIONAL RESPONSE BY DUMMY CONTROL ACTIVATION
- 65 TASK-MANIPULATIVE RESPONSE, NON-DYNAMIC IN TIME AND FORCE
- 66 TASK-MANIPULATIVE RESPONSE, DYNAMIC AND INTERACTIVE

*** FEEDBACK PRESENTATION LOGIC

- 71 NOT APPLICABLE
- 72 SELECTS NEXT STIMULUS ITEM OR SEQUENCE
- 73 GIVES EVALUATION OF PRECEDING RESPONSE
- 74 SELECTS AND PRESENTS GUIDANCE INFO

*** RESPONSE EVALUATION LOGIC

- 81 NOT INTERNAL-DEPENDS ON INSTRUCTOR OR STUDENT EVALUATION
- 82 EVALUATION LIMITED TO STUDENT'S IMMEDIATE RESPONSE
- 83 EVALUATION EXTENDED TO A SET OF STUDENT RESPONSES
- 84 TOLERANCE LIMITS ON ACCEPTABLE STUDENT RESPONSE: FIXED
- 85 TOLERANCE LIMITS ON ACCEPTABLE STUDENT RESPONSE: VARIABLE

-- TASKS

*** ADMINISTRATIVE ROUTINE PAPERWORK

- #1 FORMS FILLING
- #2 DOCUMENT-FILE MANAGEMENT
- #3 DECODE-ENCODE
- #4 SCREEN-FILTER DISTRIBUTE
- #5 OTHER

*** ADMINISTRATIVE NON-ROUTINE PAPERWORK

- 11 CONSTRUCT MESSAGES-REPORTS
- 12 ANALYZE-INTERPRET
- 13 CONSTRUCT RECOMMENDATION-PROPOSAL
- 14 CONSTRUCT PLAN
- 15 OTHER

*** ADMINISTRATIVE OFFICE EQUIPMENT OPERATION

- 21 TYPEWRITER
- 22 TELEPHONE, ETC.
- 23 REPRODUCER
- 24 COMPUTER TERMINAL
- 25 TELETYPE
- 26 OTHER

*** INTERPERSONAL: INFORM-INSTRUCT-MANAGE

- 31 BRIEF-DEBRIEF
- 32 INSTRUCT-TRAIN
- 33 ASSIGN, MONITOR, COORDINATE
- 34 EVALUATE
- 35 OTHER

*** TECHNICAL PROCEDURES

- 41 SEQUENTIAL
- 42 STRATEGIC, ADAPTIVE
- 43 INTERPERSONAL, TEAM MEMBER

44 OTHER

*** TECHNICAL TYPE OF PROCEDURE(MAIN EMPHASIS)

- 51 SCAN-DETECT: SYMBOLIC (INCL. MAPS,RADAR,TRANSDUCED SIGNALS)
- 52 SCAN-DETECT: NATURAL
- 53 IDENTIFY: SYMBOLIC(INCL. TRANSDUCED SIGNALS)
- 54 IDENTIFY: NATURAL
- 55 INTERPRET:SYMBOLIC
- 56 INTERPRET: NATURAL
- 57 PERCEPTUAL-MOTOR
- 58 COGNITIVE OPERATIONS
- 59 MANUAL
- 60 COMMUNICATE

*** TECHNICAL WITH OR WITHOUT EQUIPMENT

- 61 WITH EQUIPMENT (PAPER IS EQUIPMENT)
- 62 WITHOUT EQUIPMENT

*** TECHNICAL DECIDE

- 71 DIAGNOSE-ANALYZE
- 72 SELECT-CHOOSE
- 73 UNDER STRESS OR LOAD
- 74 OTHER

*** TECHNICAL CONSTRUCT-REPAIR, PLAN

- 81 MANUAL CONSTRUCT OR REPAIR
- 82 COGNITIVE CONSTRUCT, PLAN

*** TECHNICAL TRACK-AIM-STEER

- 91 APPLICABLE
- 92 TIME STRESS
- 93 INFORMATION-LOAD STRESS

*** TOTAL DESCRIPTOR INDEX CARDS READ : 181 ***

MASTER DESCRIPTOR INDEX PROCESSING IS NOW TERMINATING

TAEG REPORT NO. 40

PROGRAM NAME : P17

ENTRY POINT : IHECMS (Execution Parameter Supplied by Executive RUNP17)

RUN EXECUTIVES(S) : RUNP17, NONAME, IFNAME, DEVICE, JCL2

USER OUTPUT VIA : Terminal, Offline Printer, or Both

USER PROMPTING : At Executive Level : Output Device Select

FUNCTION : Load One/More Project Files With Input Data Supplied on Cards

| <u>Internal Filename (DDNAME)</u> | <u>Usage</u> | <u>Refer To File Reference Number</u> | <u>Media</u> | <u>External NCSS Filename/Filetype</u> | <u>Format</u> |
|---|--------------|---|--------------|--|---------------|
| SYSPRINT | OUTPUT | N/A : THIS IS THE OFFLINE PRINTER | | | FA, 121, 121 |
| CARDS | INPUT | 25 | DASD | Projectname/LOAD | F, 80, 80 |
| REC | OUTPUT | 27 | DASD | Projectname/REC | F, 80, 80 |
| REJ | OUTPUT | 29 | DASD | Projectname/REJ | F, 80, 80 |
| REV | OUTPUT | 28 | DASD | Projectname/REV | F, 80, 80 |
| ID | OUTPUT | 26 | DASD | Projectname/ID | F, 80, 80 |

The following files are not a functional component of the Range-Of-Effects (ROE) search process. Since they are card-image format, they can be loaded directly from Program P17 and printed from Program P1.

| | | | | | |
|------|--------|----|------|------------------|-----------|
| EXD | OUTPUT | 33 | DASD | Projectname/EXD | F, 80, 80 |
| BPT | OUTPUT | 34 | DASD | Projectname/BPT | F, 80, 80 |
| RKP | OUTPUT | 35 | DASD | Projectname/RKP | F, 80, 80 |
| RRPJ | OUTPUT | 36 | DASD | Projectname/RRPJ | F, 80, 80 |
| RRPK | OUTPUT | 37 | DASD | Projectname/RRPK | F, 80, 80 |
| VQAL | OUTPUT | 38 | DASD | Projectname/VQAL | F, 80, 80 |
| VARF | OUTPUT | 39 | DASD | Projectname/VARF | F, 80, 80 |
| SCEN | OUTPUT | 40 | DASD | Projectname/SCEN | F, 80, 80 |
| ALTP | OUTPUT | 41 | DASD | Projectname/ALTP | F, 80, 80 |

Discussion

This Program serves to generate those files of the ETAM system called "Project Files". In the current implementation, only those of card-image format are of concern. The following four card-image files are functional in the Range-of-Effects search portion of the ETAM system implementation:

| <u>Filetype</u> | <u>Usage</u> |
|-----------------|--|
| ID | Project Description |
| REC | Course Range-of-Effects (ROE) Search Descriptors |
| REV | Vehicle ROE Search Descriptors |
| REJ | Task ROE Search Descriptors |

In addition to the above, if the control-card input so signifies, the following card-image Project Files may be initialized:

| | |
|------|-------------------------|
| EXD | Search Extract Defaults |
| BPT | Benefit Pattern |
| RKP | Risk Profile |
| RRPJ | Risk Reduction Projects |
| RRPK | Risk Reduction Packages |
| VQAL | Variables Qualitative |
| VARF | Variable References |
| SCEN | Scenarios |
| ALTP | Alternate Projects |

All of the above card-image files can be printed utilizing Program P1, either individually, or in a group using the "ALL" option.

Listing of EXECUTIVE = RUNP17

```

&TYPE OFF
&COMMENT THIS EXEC CONTROLS PROJECT FILE INIT/GENERATE
&COMMENT SINGLE ENTRY PARM REQUIRED - PROJECT NAME
&COMMENT EXEC = DEVICE WILL PROMPT FOR OUTPUT DEVICE
&IF &INDEX EQ 1 &GOTO -STP1
EXEC NONAME RUNP17
-STP1 &ALPHA3 = &1
EXEC IFNAME
&SPACE
EXEC DEVICE
&SPACE
EXEC JCL2
FILEDEF SYSPRINT PTR RE FA LR 121 BL 121
FILEDEF CARDS DSK &ALPHA3 LOAD RE F LR 80 BL 80
LOAD P17 (CLEAR LIBE) PLILIB
START IHECMS &ALPHA1 (BRIEF)
FILEDEF * CLEAR
&EXIT

```


Program P17 Specific User Instructions

Since this program processes only those files associated with an individual ETAM project in a single run, the name of the project must be provided by the User when invoking the RUNP17 executive. On the sample runs to follow, this is demonstrated using the ETAM project name "PN123".

The format (contents) of the input control file (File Number 25) dictates the loading process within Program P17. See the File Section description of File Number 25 for specific card formats. The following notes apply to the ordering of the control cards within the input file.

- (1) Initialization of a particular file is signified in the control input by the occurrence of a control card with the characters "***" in record positions one and two. The Project File filetype appears in record positions four through seven. All cards following this card up to the next "***" card or end-of-file will be loaded into the indicated filetype.
- (2) More than one filetype may be initialized within one input control file.
- (3) If a given file is to be initialized, and the file already exists, then the old copy is replaced with the new.
- (4) If the first card of the control input is an "INIT" card, then any Project File not mentioned in the control input will be opened and one blank record inserted by Program P17.

Those files deemed "Project Files" in the ETAM system have been implemented in the NCSS time-sharing system as follows:

| <u>NCSS Filename</u> | <u>NCSS Filetype</u> |
|--------------------------------------|----------------------|
| The specific ETAM Project Name | ID, REC, REV, Etc. |

Program P17 Error Messages

If the "INIT" option is used as in the instructions above, then the second card of the input control file must be an "***" type to signify the placement of the cards to follow. If the "INIT" option is omitted, then the first card must be an "***" type. If this condition is not met, the following error message will be output:

*** FIRST TITLE CARD IS MISSING ***

Once a "***" title card has been detected, the filetype name on the card will be verified; the following message test will appear if the filetype is illegal. This usually signifies a spelling error:

*** TITLE CARD FILENAME -filename- IS INVALID ***

The name in error is indicated in the message. All cards following this illegal title card will be printed on the selected output device(s), until the occurrence of the next title card or end-of-file.

As files are initialized, Program P17 maintains a list of the files that have been processed within the current run. If an attempt is made to initialize the same filetype two or more times within the same run, the following error text will be output:

*** FILENAME -filename- IS DUPLICATED ***

All cards following this error will be printed up to the occurrence of the next "***" title card or end-of-file.

Program P17 Sample Run Output

In the following example, the User has selected to print the contents of the initialization on the offline printer. The text shown below appears on the online terminal. Ten of the thirteen files have been provided card initialization; three were initialized with one blank card-image record. Since the blank initialization occurred, the control input for this run contained an "INIT" card as the first card.

RUNP17 PN123

PROJECT NAMED PN123 DOES NOT YET EXIST,
IS THIS CORRECT? (RESPOND YES OR QUIT)

YES

OUTPUT TO GO TO TERMINAL, OFFLINE PRINTER, BOTH, OR QUIT?
ENTER TERM, PRTR, BOTH, OR QUIT
PRTR

\$EXECUTION:

PROJECT FILE INITIALIZATION PROGRAM IS STARTING

LOAD OF PROJECT FILETYPE : ID - PROJECT DESCRIPTION
LOAD OF PROJECT FILETYPE : REC - COURSES ROE SEARCH ARGUMENTS
LOAD OF PROJECT FILETYPE : BPT - BENEFIT PATTERN
LOAD OF PROJECT FILETYPE : RKP - RISK PROFILE
LOAD OF PROJECT FILETYPE : RRPJ - RISK REDUCTION PROJECTS

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LOAD OF PROJECT FILETYPE : SCEN - SCENARIOS
LOAD OF PROJECT FILETYPE : RRPK - RISK REDUCTION PACKAGES
LOAD OF PROJECT FILETYPE : VQAL - VARIABLES QUALIFICATION
LOAD OF PROJECT FILETYPE : VARF - VARIABLE REFERENCES
LOAD OF PROJECT FILETYPE : ALTP - ALTERNATE PROJECTS

FILE : REJ HAS BEEN INITIALIZED WITH ONE (1) BLANK RECORD

FILE : REV HAS BEEN INITIALIZED WITH ONE (1) BLANK RECORD

FILE : EXD HAS BEEN INITIALIZED WITH ONE (1) BLANK RECORD

*** ALL DATASETS INITIALIZED ***

*** TOTAL NUMBER INPUT CARDS READ : 461 ***

PROJECT FILE INITIALIZATION PROGRAM IS NOW TERMINATING

PROGRAM NAME : P18

ENTRY POINT : P18

RUN EXECUTIVES(S) : STARTUP, START1, START2

USER OUTPUT VIA : None

USER PROMPTING : None

FUNCTION : Initializes (zeros) counts in Master Reference File
(File Number 1)

| <u>Internal Filename (DDNAME)</u> | <u>Usage</u> | <u>Refer To File Reference Number</u> | <u>Media</u> | <u>External NCSS Filename/Filetype</u> | <u>Format</u> |
|---|--------------|---|--------------|--|---------------|
| MREF | OUTPUT | 1 | DASD | ETAM/MREF | F, 80, 80 |

Discussion

This file contains forty (40) binary halfword counts per record. Currently, there is only one record (one card-image) in use in this file. All forty quantities are zeroed by one run of P18, i.e., any previous contents will be destroyed.

Listing of EXECUTIVE = STARTUP

P STARTUP EXEC.

```

&TYPE OFF
&COMMENT THIS IS THE SYSTEM STARTUP EXEC
&COMMENT NO INPUT PARAMETERS REQUIRED
-STEP1 STATE ETAM MREF P
    &IF &INDEX0 EQ 0 &GOTO -MDONE
LOAD P18 (CLEAR LIB) PLILIB
FILEDEF MREF DSK ETAM MREF RE F LR 80 BL 80
START (BRIEF)
    &IF &INDEX0 EQ 0 &GOTO -MGO
-ER1 EXEC BROKE 1 &INDEX0
EXEC START1 4 MREF
    &GOTO -STEP2
-MGO EXEC START1 2 MREF
    &GOTO -STEP2
-MDONE EXEC START1 1 MREF
-STEP2 EXEC START2 CDESC SCDESC 2 1 8
-STEP3 EXEC START2 VDATA SVDATA 3 1 13
-STEP4 EXEC START2 VCDESC SVCDESC 4 1 13
-STEP5 EXEC START2 TDATA STDATA 5 1 13
-STEP6 EXEC START2 TDSCR STDSCR 6 1 13
&EXIT

```


Listing of EXECUTIVE = START1

```

&TYPE OFF
&COMMENT P1 IS INTERNAL MESSAGE ROUTER, RANGES 1 TO 5
&COMMENT P2 IS FILETYPE NAME
&IF &1 EQ 5 &GOTO -NYET
&IF &1 EQ 4 &GOTO -BUST
&IF &1 EQ 3 &GOTO -RGO
&IF &1 EQ 2 &GOTO -GO
&PRINT FILE &2 HAS BEEN PREVIOUSLY INITIALIZED
&EXIT
-GO &PRINT INITILIZE OF FILE &2 WAS SUCCESSFUL
&EXIT
-RGO &PRINT REINITILIZE OF FILE &2 WAS SUCCESSFUL
&EXIT
-BUST &PRINT FILE &2 INITIALIZATION FAILED
&SPACE
&EXIT
-NYET &PRINT FILE &2 CANNOT BE INITIALIZED (NO INPUT DATA)
&EXIT

```

Listing of EXECUTIVE = START2

```

&TYPE OFF
&COMMENT P1 IS FT OF OFFLINE READ INPUT FILE
&COMMENT P2 IS FT OF NEW FILE TO BE CREATED
&COMMENT P3 IS ERROR NUMBER, IF BREAKS
&COMMENT P4 AND P5 ARE THE SORT PARMS
STATE ETAM &1 P
&IF &INDEX& NE 0 &GOTO -NONEW
ERASE .ETAM &1
&STACK &4 &5
&STACK KT
SORT ETAM &1 (BRIEF)
&IF &INDEX& EQ 0 &GOTO -SGO
-ERR EXEC BROKE &3 &INDEX&
EXEC START1 4 &2
&EXIT &3
-SGO STATE ETAM &2 P
&IF &INDEX& NE 0 &GOTO -NOREG
&INDEX1 = 3
ERASE ETAM &2 P
&GOTO -SNEW
-NOREG &INDEX1 = 2
-SNEW ALTER .ETAM &1 P ETAM &2 P
EXEC START1 &INDEX1 &2
&EXIT
-NONEW STATE ETAM &2 P
&IF &INDEX& EQ 0 &GOTO -STP1
EXEC START1 5 &2
&EXIT
-STP1 EXEC START1 1 &2
&EXIT

```

Program P18 Error Messages

None required.

Program P18 Sample Run Output

None generated by this program.

PROGRAM NAME : P20

ENTRY POINT : IHECMS (Execution Parameter Supplied by Executive
RUNP20 at Entry)

RUN EXECUTIVES(S) : RUNP20, DEVICE, JCL

USER OUTPUT VIA : Terminal Offline Printer, or Both

USER PROMPTING : At Executive Level: (1) Output Device Select
(2) Print Option Select (C, V, or T)FUNCTION : Prints Course, Vehicle, or Task Entities and the
Descriptors Associated With Each

| <u>Internal Filename (DDNAME)</u> | <u>Usage</u> | <u>Refer To File Reference Number</u> | <u>Media</u> | <u>External NCSS Filename/Filetype</u> | <u>Format</u> |
|---|--------------|---|--------------|--|---------------|
| SYSPRINT | OUTPUT | N/A : THIS IS THE OFFLINE PRINTER | | | FA, 121, 121 |
| MREF | INPUT | 1 | DASD | ETAM/MREF | F, 80, 80 |
| DIND | DIRECT | 3 | DASD | ETAM/DIND | F, 80, 80 |
| DESC | INPUT | 6 | DASD | ETAM/DESC | F, 213, 213 |
| DCIN | INPUT | 8 | DASD | ETAM/DCIN | F, 760, 760 |
| VDESC | INPUT | 12 | DASD | ETAM/VDESC | F, 213, 213 |
| DVEH | INPUT | 16 | DASD | ETAM/DVEH | F, 750, 750 |
| TDESC | INPUT | 19 | DASD | ETAM/TDESC | F, 213, 213 |
| DTASK | INPUT | 23 | DASD | ETAM/DTASK | F, 1500, 1500 |
| VEHS | DIRECT | 15 | DASD | ETAM/VEHS | F, 80, 80 |
| TASKS | DIRECT | 22 | DASD | ETAM/TASKS | F, 80, 80 |

Discussion

This program provides print facilities for the three types of ETAM entities - Courses, Vehicles, and Tasks. The entity type and output device type are selected by the User at the executive level.

Printer output from Program P20 is of the general format: entity description followed by all descriptors assigned to that particular entity. The order of output for Courses is by CIN number; for Vehicles, Stock Number order is maintained. For Tasks, the output is ordered by the contents of the 13-byte field of concatenated Rate, Rank, and Jobtask Number.

Listing of EXECUTIVE = RUNP20

```

&TYPE OFF
&COMMENT G.P. PRINT EXEC FOR COURSES, VEHICLES, TASKS ;
&COMMENT PRINTS DESCRIPTORS ASSIGNED TO EACH ENTITY
&COMMENT ENTRY/DEVICE PROMPTS DONE HERE AND IN EXEC = DEVICE
&SPACE
&PRINT DESCRIPTOR PRINT PROGRAM IS STARTING
&SPACE
&PRINT ENTER SINGLE CHARACTER OPTION (OR QUIT TO TERMINATE)
&PRINT C = PRINT ALL DESCRIPTORS FOR COURSES, SORTED BY CIN
&PRINT V = PRINT ALL DESCRIPTORS ASSIGNED TO VEHICLES
&PRINT T = LIST DESCRIPTORS ASSIGNED TO TASK DATA
-STP1 &READ ARCS
&IF &1 EQ QUIT &QUIT
&ALPHA& = &1
&IF &1 EQ C &GOTO -STP2
&IF &1 EQ V &GOTO -STP2
&IF &1 EQ T &GOTO -STP2
&SPACE
&PRINT UNABLE TO DETERMINE ENTRY TYPE - TRY AGAIN
&SPACE
&GOTO -STP1
-STP2 EXEC DEVICE
&ALPHA2 = &ALPHA& !! &ALPHA1
-STP3 &SPACE
EXEC JCL
FILEDEF SYSPRINT PTR RE FA LR 121 BL 121
LOAD P2& (CLEAR LIBE) PLILIB
START IHECMS &ALPHA2 (BRIEF)
FILEDEF * CLEAR
&EXIT

```


Program P20 Error Messages

Program P20 can produce the following error text (two lines):

**** ERROR NUMBER XX HAS OCCURED ****

(Followed by a descriptive content line - varies with message number, as indicated below)

The error numbers associated with the above message have the following significance:

- 01 - The entry parameter supplied to Program P20 at entry time was not one of the three characters "C", "V", or "T".

The 2nd error line will contain the actual character(s) provided as an entry parameter by the external executive.

- 02 - A pointer discrepancy has been detected in the Descriptor Master Index file (File Number 3).

The second error line contains the expected and actual pointer values of concern.

- 03 - Pointer to the ETAM/DIND Descriptor Master Index file is outside the bounds of the file.

Second error line = same as that for error number 02.

- 04 - Number of categories in the ETAM/DIND file is greater than 15.

Second error line, same as for error number 02.

Program P20 Specific User Instructions

Three print options exist for the User in Program P20. These options are exercised by the selection of a single character to be entered via online terminal. The options are as follows:

| <u>Character</u> | <u>Meaning</u> |
|------------------|---|
| "C" | Select Courses and their related descriptors for output |
| "V" | Select Vehicles, etc. |
| "T" | Select Tasks. |

Program P20 Sample Run Output - Course Selection

Selection of the "C" options results in output as presented in the following sample. Shown are the prompting sequences and a few sample lines to illustrate the general format for Course output.

RUNP20

DESCRIPTOR PRINT PROGRAM IS STARTING

ENTER SINGLE CHARACTER OPTION (OR QUIT TO TERMINATE)
 C = PRINT ALL DESCRIPTORS FOR COURSES, SORTED BY CIN
 V = PRINT ALL DESCRIPTORS ASSIGNED TO VEHICLES
 T = LIST DESCRIPTORS ASSIGNED TO TASK DATA
 C

OUTPUT TO GO TO TERMINAL, OFFLINE PRINTER, BOTH, OR QUIT?
 ENTER TERM, PRTR, BOTH, OR QUIT
 TERM

\$\$EXECUTION:

PAGE 1 : COURSE DESCRIPTOR ASSIGNMENTS

CIN : A 000111

*** REFERENCE KNOWLEDGE

- 01 SYSTEM PURPOSES
- 03 CONTEXTS OF OPERATION
- 04 ORGANIZATIONAL RULES

*** ENABLING KNOWLEDGE

- 11 NOMENCLATURE, IDENTIFICATION, LOCATION
- 12 PROCEDURAL DESCRIPTIONS
- 13 JOB RELEVANT FACTS, RULES

*** TASK FORMATS

- 20 PROCEDURE FORMATS
- 21 DECISION FORMATS
- 22 CONSTRUCTION FORMATS

*** GROSS JOB CATEGORIES

- 33 COMMAND

*** OBJECTIVE TASK VARIABLES AS MANIFEST IN THE TRAINING

- 42 EQUIPMENT & OBJECTS USED: SYMBOLIC
- 45 ENVIRONMENTS IN WHICH TASK IS TRAINED: SYMBOLIC
- 48 TOOLS/INSTRUMENTS USED IN TRAINING: SYMBOLIC
- 53 CRITERIA OF TASK PERFORMANCE: SYMBOLIC

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*** TASK FUNCTIONS DOMINANT IN TRAINING

65 DECIDE

66 CONSTRUCT, PLAN

*** STAGE OF LEARNING

82 TASK FORMATS AT CONCEPTUAL LEVEL

CIN : A 2E0013

*** REFERENCE KNOWLEDGE

01 SYSTEM PURPOSES

02 ORGANIZATIONAL ROLES

03 CONTEXTS OF OPERATION

... Output interrupted at this point ...

Program P20 Sample Run Output - Vehicles Selection

Following is an illustration of the "V" option output:

RUNP20

DESCRIPTOR PRINT PROGRAM IS STARTING

ENTER SINGLE CHARACTER OPTION (OR QUIT TO TERMINATE)

C = PRINT ALL DESCRIPTORS FOR COURSES, SORTED BY CIN

V = PRINT ALL DESCRIPTORS ASSIGNED TO VEHICLES

T = LIST DESCRIPTORS ASSIGNED TO TASK DATA

V

OUTPUT TO GO TO TERMINAL, OFFLINE PRINTER, BOTH, OR QUIT?

ENTER TERM, PRTR, BOTH, OR QUIT

TERM

\$EXECUTION:

PAGE 1 : VEHICLE DESCRIPTOR ASSIGNMENTS

6910LLC000468 / 12CD-17 / MATH, VECTOR ACCELERATION DEMONSTRATOR T/A

*** VEHICLE TYPES

03 ANIMATED GRAPHICS

*** CLASS OF TRAINING OBJECTIVE

11 REFERENCE KNOWLEDGE

*** VEHICLE PROPERTIES

21 VISUAL

... Output terminated at this point ...

Program P20 Sample Run Output - Tasks Option

Selection of the "T" option results in output that is in the following format:

RUNP20

DESCRIPTOR PRINT PROGRAM IS STARTING

ENTER SINGLE CHARACTER OPTION (OR QUIT TO TERMINATE).
C = PRINT ALL DESCRIPTORS FOR COURSES, SORTED BY CIN
V = PRINT ALL DESCRIPTORS ASSIGNED TO VEHICLES
T = LIST DESCRIPTORS ASSIGNED TO TASK DATA
T

OUTPUT TO GO TO TERMINAL, OFFLINE PRINTER, BOTH, OR QUIT?
ENTER TERM, PRTP, BOTH, OR QUIT
TERM

EXECUTION:

PAGE 1 : JOBTASK DESCRIPTOR ASSIGNMENTS

AN / / 20350 AIRCRAFT UNDER EMERGENCY CONDITIONS

*** TECHNICAL PROCEDURES

41 SEQUENTIAL

42 STRATEGIC, ADAPTIVE

*** TECHNICAL TYPE OF PROCEDURE(MAIN EMPHASIS)

57 PERCEPTUAL-MOTOR

*** TECHNICAL WITH OR WITHOUT EQUIPMENT

61 WITH EQUIPMENT (PAPER IS EQUIPMENT)

*** TECHNICAL DECIDE

73 UNDER STRESS OR LOAD

AN / / 20351 IDENTIFY MARKINGS INDICATING DANGEROUS AREAS

*** TECHNICAL TYPE OF PROCEDURE(MAIN EMPHASIS)

53 IDENTIFY: SYMBOLIC(INCL. TRANSDUCED SIGNALS)

AN / / 20352 IDENTIFY TOXIC PROPERTIES OF CLEANING MATERIALS

*** TECHNICAL TYPE OF PROCEDURE(MAIN EMPHASIS)

54 IDENTIFY: NATURAL

AN / / 20368 RECOGNIZE ARMED EJECTION SEATS

*** TECHNICAL TYPE OF PROCEDURE(MAIN EMPHASIS)

54 IDENTIFY: NATURAL

... Output terminated at this point ...

SECTION D.3

NCSS EXECUTIVE SEQUENCES ASSOCIATED WITH MULTIPLE PROGRAMS

Each program of the ETAM system has an associated NCSS executive (exec) routine. These executives are listed in the Section covering the program of concern.

The executives within this Section are, in general, multiple usage modules not associated with a single ETAM program; a brief description and a listing of each follows.

EXECUTIVE = BROKE

This is a general-purpose routine used to print a standardized error message. The routine is designed to be invoked by a higher-level executive. Return is always to the caller-executive routine.

```
&TYPE OFF
&COMMENT P1 IS ERROR NUMBER
&COMMENT P2 IS INDEXØ VALUE THAT CAUSED ERROR
&SPACE
&PRINT *** ERROR NUMBER &1 HAS OCCURED ; INDEXØ VALUE WAS &2 ***
&SPACE
&EXIT
TOP
```

EXECUTIVE = DEVICE

Many of the ETAM programs have been designed to direct output to the User's online terminal, offline printer, or both. This executive function is to prompt the User in the selection of the desired device(s). If the User elects the QUIT option, forced termination of the executive sequence at all levels follows.

```
&TYPE OFF
&COMMENT PROMPTING EXEC FOR DEVICE
&COMMENT NO ENTRY ARGUMENTS REQUIRED
&COMMENT IF QUIT ENTERED, EXEC SEQUENCE TERMINATED
&COMMENT NORMAL RETURN WITH &ALPHA1 SET TO ENTRY
-STEP1 &SPACE
&PRINT OUTPUT TO GO TO TERMINAL, OFFLINE PRINTER, BOTH, OR QUIT?
&PRINT ENTER TERM, PRTR, BOTH, OR QUIT
```

```
-STP2 GREAD ARGS
      &IF &1 EQ QUIT &QUIT
      &ALPHA1 = &1
      &IF &1 EQ BOTH &EXIT
      &IF &1 EQ PRTR &EXIT
      &IF &1 EQ TERM &EXIT
      &SPACE
      &PRINT UNABLE TO DETERMINE ENTRY TYPE - TRY AGAIN
      &SPACE
      &GOTO -STP2
```

EXECUTIVE = IFNAME

Those programs associated with a specific ETAM project must be furnished the name of the project. No operation can ensue, if the project name is omitted. This executive determines the existence of the project name provided.

P IFNAME EXEC

```
&TYPE OFF
&COMMENT EXEC TO VALIDATE THE EXISTENCE OF A USER-
&COMMENT SUPPLIED PROJECT NAME
&COMMENT ENTRY REQUIRES GLOBAL ALPHA VARIABLE NO. 3
&COMMENT TO BE INITIALIZED TO THE PROJECT FILE NAME
&SPACE
STATE &ALPHA3 ID P
      &IF &INDEX & EQ 0 &GOTO -YES
-NO &PRINT PROJECT NAMED &ALPHA3 DOES NOT YET EXIST,
      &GOTO -STP1
-YES &PRINT PROJECT NAMED &ALPHA3 ALREADY EXISTS,
-STP1 &PRINT IS THIS CORRECT? (RESPOND YES OR QUIT)
      &SPACE
      GREAD ARGS
      &IF &1 EQ YES &EXIT
      &IF &1 EQ QUIT &QUIT
      &SPACE
      &PRINT CANNOT DETERMINE LAST ENTRY - TRY AGAIN
      &SPACE
      &GOTO -STP1
```

EXECUTIVE = JCL

This executive provides the FILEDEF statements required by an ETAM program making reference to any of the abbreviated data bases.

```

&TYPE OFF
&COMMENT G.P. FILEDEF EXEC FOR ETAM SYSTEM FILES
&COMMENT NO ENTRY/EXIT PARAMETERS OR ARGUMENTS
FILEDEF MREF DSK ETAM MREF RE F LR 80 BL 80
FILEDEF DIND DSK ETAM DIND RE F LR 80 BL 80
FILEDEF COURSE DSK ETAM COURSE RE F LR 80 BL 80
FILEDEF DCIN DSK ETAM DCIN RE F LR 760 BL 760
FILEDEF DCDP DSK ETAM DCDP RE F LR 1200 BL 1200
FILEDEF DESC DSK ETAM DESC RE F LR 213 BL 213
FILEDEF VEHS DSK ETAM VEHS RE F LR 80 BL 80
FILEDEF DVEH DSK ETAM DVEH RE F LR 750 BL 750
FILEDEF VDESC DSK ETAM VDESC RE F LR 213 BL 213
FILEDEF TASKS DSK ETAM TASKS RE F LR 80 BL 80
FILEDEF DTASK DSK ETAM DTASK RE F LR 1500 BL 1500
FILEDEF TDESC DSK ETAM TDESC RE F LR 213 BL 213
&EXIT

```

EXECUTIVE = JCL2

Similar to the JCL executive, this executive provides FILEDEF statements for programs requiring access to the files of a specific ETAM project.

```

&TYPE OFF
&COMMENT G.P. FILEDEFS FOR PROJECT FILES
&COMMENT SINGLE ENTRY PARM IS PROJECT FILETYPE IN
&COMMENT GLOBAL ALPHA VARIABLE 3
FILEDEF ID DSK &ALPHA3 ID RE F LR 80 BL 80
FILEDEF REC DSK &ALPHA3 REC RE F LR 80 BL 80
FILEDEF REJ DSK &ALPHA3 REJ RE F LR 80 BL 80
FILEDEF REV DSK &ALPHA3 REV RE F LR 80 BL 80
FILEDEF EXD DSK &ALPHA3 EXD RE F LR 80 BL 80
FILEDEF BPT DSK &ALPHA3 BPT RE F LR 80 BL 80
FILEDEF RKP DSK &ALPHA3 RKP RE F LR 80 BL 80
FILEDEF RRPJ DSK &ALPHA3 RRPJ RE F LR 80 BL 80
FILEDEF RRPK DSK &ALPHA3 RRPK RE F LR 80 BL 80
FILEDEF VOAL DSK &ALPHA3 VOAL RE F LR 80 BL 80
FILEDEF VARF DSK &ALPHA3 VARF RE F LR 80 BL 80
FILEDEF SCEN DSK &ALPHA3 SCEN RE F LR 80 BL 80
FILEDEF ALTP DSK &ALPHA3 ALTP RE F LR 80 BL 80
FILEDEF RESU DSK &ALPHA3 RESU RE FB LR 16 BL 800
FILEDEF REE DSK &ALPHA3 REE RE FB LR 16 BL 800
FILEDEF SARG DSK &ALPHA3 SARG RE F LR 240 BL 240
&EXIT

```

EXECUTIVE = NONAME

If a program associated with an ETAM project file is invoked without supplying the name of the project, this executive will diagnose the error. A message will be output to inform the User, and action at all levels will be terminated.

```
&TYPE OFF
&COMMENT THIS EXEC FOR ERROR MESSAGE AND FORCED TERMINATE
&COMMENT IN THE EVENT OF NO PROJECT NAME SUPPLIED.
&COMMENT SINGLE ENTRY PARM IS NAME OF EXEC ENDING.
&SPACE
&PRINT **: NO PROJECT NAME SUPPLIED BY USER,
&PRINT EXEC &1 IS TERMINATING ABNORMALLY **:
&SPACE
&QUIT
```

EXECUTIVE = ETAM

This is the ETAM master control executive as discussed in Section III. Figure III-18 depicts the control logic implemented into this executive. The text output to the online terminal is illustrated in Figure III-19. Following this executive listing is a listing of NCSS file ETAM/TEXT1 - this contains output text to be used by the ETAM executive.

```
&TYPE OFF
&COMMENT THIS IS THE OVERALL SYSTEM EXEC
&COMMENT NO ENTRY PARMS REQUIRED
-S1 &SPACE
&PRINT ENTER PROJECT IDENTIFIER, E.G., PN123 (5 CHARACTERS)
&SPACE
&READ ARGS
&SPACE
&IF &INDEX EQ 1 &GOTO -S2
&PRINT CANNOT DECODE LAST ENTRY - TRY AGAIN
&GOTO -S1
-S2 &IF &1 EQ QUIT &QUIT
&ALPHA5 = &1
STATE &ALPHA5 ID P
&IF &INDEX EQ 0 &GOTO -S5
-S3 &SPACE
&PRINT PROJECT FILE DOES NOT EXIST
&PRINT GENERATE NEW FILE? ? ?
&PRINT 1) YES
&PRINT 2) NO
&PRINT ENTER: 1 OR 2
&SPACE
```



```

&READ ARGS
&SPACE
&IF &1 EQ 2 &GOTO -S1
&IF &1 EQ QUIT &QUIT
&IF &1 EQ 1 &GOTO -S4
&PRINT CANNOT DECODE LAST ENTRY - TRY AGAIN
&GOTO -S3
-S4 EXEC RUNP17 &ALPHA5
-S5 &SPACE
&PRINT SELECT OPTION.
&PRINT 1) ROE
&PRINT 2) ASSESS
&PRINT 3) PRINT
&PRINT 4) NEW PROJECT
&PRINT 5) INSTRUCTIONS
&PRINT 6) QUIT
&PRINT ENTER: 1 ... 6
&SPACE
&READ ARGS
&SPACE
&IF &1 EQ QUIT &QUIT
&IF &1 EQ 6 &QUIT
&IF &1 EQ 4 &GOTO -S1
&IF &1 EQ 5 &GOTO -MENU
&IF &1 EQ 3 &GOTO -PGM1
&IF &1 EQ 2 &GOTO -ASSESS
&IF &1 EQ 1 &GOTO -ROE
&PRINT CANNOT DECODE LAST ENTRY - TRY AGAIN
&GOTO -S5
-PGM1 EXEC RUNP1 &ALPHA5
&GOTO -S5
-MENU PRINTF ETAM TEXT1
&GOTO -S5
-ROE &SPACE
&PRINT RANGE-OF-EFFECT, SELECT OPTION
&PRINT 1) EDIT DESCRIPTOR
&PRINT 2) SEARCH
&PRINT 3) PRINT SEARCH
&PRINT 4) EDIT SEARCH
&PRINT 5) PRINT EXTRACT
&PRINT 6) QUIT
&PRINT ENTER: 1 ... 6
&SPACE
&READ ARGS
&SPACE
&IF &1 EQ QUIT &QUIT
&IF &1 EQ 6 &QUIT
&IF &1 EQ 1 &GOTO -PGM2
&IF &1 EQ 2 &GOTO -PGM3
&IF &1 EQ 3 &GOTO -PGM5A
&IF &1 EQ 4 &GOTO -PGM5B
&IF &1 EQ 5 &GOTO -PGM5C
&PRINT CANNOT DECODE LAST ENTRY - TRY AGAIN
&GOTO -ROE

```

```

-PGM2 EXEC RUNP2 &ALPHA5
  &GOTO -MROE
-PGM3 EXEC RUNP3 &ALPHA5
  &GOTO -MROE
-PGM5A EXEC RUNP5A &ALPHA5
  &GOTO -MROE
-PGM5B EXEC RUNP5B &ALPHA5
  &GOTO -MROE
-PGM5C EXEC RUNP5C &ALPHA5
-MROE &SPACE
  &PRINT CONTINUE ROE TO SELECT OTHER ROUTINES? ? ?
  &PRINT 1) YES
  &PRINT 2) NO
  &PRINT ENTER: 1 OR 2
  &SPACE
  &READ ARGS
  &SPACE
  &IF &1 EQ QUIT &QUIT
  &IF &1 EQ 1 &GOTO -ROE
  &IF &1 EQ 2 &GOTO -S5
  &PRINT CANNOT DECODE LAST ENTRY - TRY AGAIN
  &GOTO -MROE
-ASSESS &SPACE
  &PRINT ASSESSMENT - SELECT OPTION
  &PRINT 1) MODEL
  &PRINT 2) RISK
  &PRINT 3) DECISION
  &PRINT 4) FINANCIAL
  &PRINT 5) QUIT
  &PRINT ENTER: 1 ... 5
  &SPACE
  &READ ARGS
  &SPACE
  &IF &1 EQ QUIT &QUIT
  &IF &1 EQ 5 &QUIT
  &IF &1 EQ 1 &GOTO -NONE
  &IF &1 EQ 2 &GOTO -NONE
  &IF &1 EQ 3 &GOTO -NONE
  &IF &1 EQ 4 &GOTO -NONE
  &PRINT CANNOT DECODE LAST ENTRY -TRY AGAIN
  &GOTO -ASSESS
-NONE &SPACE
  &PRINT PROGRAM NOT INSTALLED.
-MASS &SPACE
  &PRINT CONTINUE ASSESS TO SELECT OTHER ROUTINES? ? ?
  &PRINT 1) YES
  &PRINT 2) NO
  &PRINT ENTER: 1 OR 2
  &SPACE
  &READ ARGS
  &SPACE
  &IF &1 EQ QUIT &QUIT
  &IF &1 EQ 1 &GOTO -ASSESS
  &IF &1 EQ 2 &GOTO -S5
  &PRINT CANNOT DECODE LAST ENTRY - TRY AGAIN
  &GOTO -MASS

```

FILE = ETAM/TEXT1

This file contains text to be output by the master control executive named ETAM.

P ETAM TEXT1

ETAM INSTRUCTIONS

OPTIONS 1 THRU 6 PERMIT SELECTION OF THE FOLLOWING ETAM FUNCTIONS.

- 1 WILL CAUSE ENTRY INTO THE ETAM RANGE-OF-EFFECT FUNCTION FOR:
RUNNING DESCRIPTOR EDIT PROGRAM
SEARCHING ABBREVIATED DATA BASES
PRINTING SEARCH RESULTS
RUNNING SEARCH EDIT PROGRAM
RUNNING PRINT EXTRACT PROGRAM
- 2 WILL CAUSE ENTRY INTO THE ETAM ASSESSMENT FUNCTION FOR:
SETTING UP MODEL INPUTS FOR MODEL RUN
PACKAGING RISK REDUCTION PROJECTS
RUNNING DECISION ANALYSIS PROGRAMS
RUNNING FINANCIAL ANALYSIS PROGRAMS
- 3 WILL PERMIT PRINTING OF PROJECT DATA BASE FILES
- 4 WILL CAUSE A RETURN TO THE BEGINNING OF THE ETAM CONTROL EXEC SO THAT A DIFFERENT PROJECT ID CAN BE ENTERED
- 5 WILL CAUSE THESE ETAM INSTRUCTIONS TO BE REPRINTED
- 6 WILL END ETAM EXEC CONTROL AND RETURN TO NCSS CONTROL

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SECTION D.4

ETAM FILE FORMATS, AS IMPLEMENTED

The current ETAM system has been implemented to provide those features up to and including the Range-of-Effects search process. This has resulted in the identification of forty-one (41) unique data files.

In conformity with the rules of the NCSS time-sharing vendor's online system, a file is made unique by establishing a unique "filename" and/or "filetype". Two filenames are used by the ETAM system, as follows:

Filename = ETAM: For those applications and data required by all ETAM projects in common. For instance, all ETAM projects access the same Abbreviated Course data base.

Filename = Project name: These files are unique to each given ETAM project. Convention dictates that this project name be of the format "PNxxx" where "xxx" is numeric.

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 1

NCSS FILENAME/FILETYPE : ETAM/MREF

MEDIA : DASD

FORMAT : F, 80, 80

CREATED/GENERATED BY : Program P18 (zeros contents); for value insertion,
see table, below

CONTENTS PRINTED BY : Not Applicable

FILE FUNCTION : Record counts are saved in this file to be used, as
required, by various programs of the ETAM system.

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|----------------------------|--|---------------|-------------|------------------------|
| 1-2 | Fixed Binary Count | 2 | Fixed Bin | See below, for meaning |
| 3-80 | Repeat of (1-2) Above, Occurs 40 Times Total | 78 | Fixed Bin | |

This file contains counts to be used as required by the various programs of the ETAM system. MREF contains a single 80-byte (card image) record; as indicated above, space has been reserved for forty (40) unique fixed binary counts. Current usage is indicated in the table below. Indicated are the programs in which the individual quantities are established and the quantity meaning. Note that some are 0-origin (zero-origin), whereas others are 1-origin (one-origin) in their context.

| <u>Subscript</u> | <u>Count Origin</u> | <u>Count Related to Filetype</u> | <u>File Ref</u> | <u>Set in Program</u> | <u>Count Meaning</u> |
|------------------|-------------------------|--------------------------------------|---------------------|---------------------------|---|
| 1 | 0 | COURSE | 7 | P7 | Total number of records in the Abbreviated course file |
| 2 | 0 | DCIN | 8 | P7 | Maximum subscript used in the course file CIN directory |
| 3 | 0 | DCDP | 9 | P7 | Total number of entries in the course file CDP direc- tory; this quantity should correspond to the subscript (1) value, above |
| 4 | 0 | DIND | 3 | P16 | Highest subscript used in the Descriptor Master Index |

TAEG REPORT NO. 40

| <u>Subscript</u> | <u>Count Origin</u> | <u>Count Related to Filetype</u> | <u>File Ref</u> | <u>Set in Program</u> | <u>Count Meaning</u> |
|------------------|-------------------------|--------------------------------------|---------------------|---------------------------|---|
| 5 | 1 | SCDESC | 5 | P7A | Total number of course file descriptor cards |
| 6 | 1 | DESC | 6 | P7A | Total number course des- criptor records |
| 7 | 0 | VEHS | 15 | P8 | Total number records in the Abbreviated vehicle data file |
| 8 | 0 | DVEH | 16 | P8 | Maximum subscript set in the vehicle file directory |
| 9 | 1 | VDESC | 12 | P8 | Total number of records in the vehicle descriptor file |
| 10 | 1 | SVCDESC | 11 | P8 | Total number vehicle des- criptor cards |
| 11 | 0 | TASKS | 22 | P9 | Total number record in the Abbreviated vehicle file |
| 12 | 0 | DTASK | 23 | P9 | Maximum subscript used in the task file directory |
| 13 | 1 | TDESC | 19 | P9 | Total number records in the task descriptor file |
| 14 | 1 | STDSCR | 18 | P9 | Total number task descriptor cards |

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 2

NCSS FILENAME/FILETYPE : ETAM/DICRDS

MEDIA : DASD

FORMAT : F, 80, 80

CREATED/GENERATED BY : Not Applicable

CONTENTS PRINTED BY : Not Applicable

FILE FUNCTION : Input card deck for the Descriptor Master Index
Build Program P15

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|----------------------------|------------------|---------------|-------------|-----------------------|
| 1-2 | Field A | 2 | Char | |
| 3 | Filler | 1 | Char | Blank |
| 4-80 | Field B | 77 | Char | |

One input card deck contains descriptor decks for all three entities, in following order: Courses, Vehicles, Tasks.

One descriptor deck for a single entity is composed as follows:

Card #1 Field A = '**'
 Field B = 'COURSES', 'VEHICLE', or 'TASKS'; left justified;
 remainder of Field B is blank

Card #2 Field A = Descriptor Number
 Field B = Descriptor Title

The combination of category card (#2, above) followed by as many descriptor cards (#3, above) as appropriate is repeated.

All descriptor numbers must be in ascending sort order, starting with number = one.

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 3

NCSS FILENAME/FILETYPE : ETAM/DIND

MEDIA : DASD

FORMAT : F, 80, 80

CREATED/GENERATED BY : Program P16

CONTENTS PRINTED BY : Program P16, P7B, P8A, P9A, P20

FILE FUNCTION : Descriptor Master Index

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|------------------------|------------------|---------------|-------------|-----------------------|
|------------------------|------------------|---------------|-------------|-----------------------|

The following is a map of the Master Descriptor Index in memory. File number 3 is card image, therefore, 4 80-byte records are required to load the following structure.

Records Nos. 0 thru 3 are the Course index; records 4 thru 7 load the Vehicle index; records 8 thru 11 load the Task index.

The Master Index description cards (see File number 2) are then loaded into this file sequentially, starting at record location 12.

| | | | | |
|-------|---|----|-----------|--|
| 1-2 | Start Card Number for this Entity Category | 2 | Fixed Bin | Card number = relative number within this file |
| 3-4 | End Card Number for this Entity | 2 | Fixed Bin | |
| 5-6 | Total Number of Descriptor Categories for this Entity | 2 | Fixed Bin | |
| 7-8 | Total Number of Descriptors Active for this Entity | 2 | Fixed Bin | |
| 9-10 | Pointer to 1st Category Card for this Entity | 2 | Fixed Bin | |
| 11-12 | Start Descriptor Number within the Current Category | 2 | Fixed Bin | |
| 13-14 | Last Descriptor Number within Current Category | 2 | Fixed Bin | |
| 15-98 | Pos (9-14) Repeated, Occurs 15 Times Total | 84 | Fixed Bin | Unused portion of this array is zeroed |

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 4, 5

NCSS FILENAME/FILETYPE : (4) ETAM/CDESC; (5) ETAM/SCDESC

MEDIA : DASD

FORMAT : F, 80, 80

CREATED/GENERATED BY : Not Applicable

CONTENTS PRINTED BY : Not Applicable

FILE FUNCTION : Input card deck with Descriptors as assigned to
course data

The CDESC card file is the data as transmitted to the NCSS time-sharing vendor.
This file may be in unsorted format.

The SCDESC file has been sorted into ascending sequence by CIN number.
This sort is accomplished in the executive sequence STARTUP.

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|----------------------------|--------------------------------|---------------|-------------|-----------------------|
| 1-8 | CIN Number | 8 | Char | |
| 9 | Filler | 1 | Char | Blank |
| 10-11 | 2-Digit Descriptor | 2 | F(2) | P'99' |
| 12-80 | Pos 9-11, Repeated 23 times | | | |

- Notes - Max of 24 descriptors per card; if full card not required, leave remainder blank.
- Each descriptor is a two-digit number; supply lead zero, if applicable.

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 6

NCSS FILENAME/FILETYPE : ETAM/DESC

MEDIA : DASD

FORMAT : F, 213, 213

CREATED/GENERATED BY : Program P7A

CONTENTS PRINTED BY : Program P20 (Option C)

FILE FUNCTION : Descriptor data to match the contents of the Abbreviated
course data file (File Number 7)

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|----------------------------|---|---------------|-------------|------------------------------------|
| 1-8 | CIN Number | 1 | Char | |
| 9-13 | Filler | 5 | Char | Blank |
| 14-213 | Descriptor Flags, Occurs (100) Times | 200 | Fixed Bin | Initially, all flags are zeroed |

Note - Descriptor Flags (subscripted 1 to 100, incl.) are NON-ZERO
for those descriptors applicable to the Course keyed by the
CIN portion of the record.

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 7

NCSS FILENAME/FILETYPE : ETAM/COURSE

MEDIA : DASD

FORMAT : F, 80, 80

CREATED/GENERATED BY : Program P14

CONTENTS PRINTED BY : Program P7B

FILE FUNCTION : Abbreviated Course Data File

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|----------------------------|---------------------------------|---------------|-------------|-----------------------|
| 1-4 | CDP | 4 | Char | Blank, if missing |
| 5-12 | CIN | 8 | Char | |
| 13-28 | Course Short Title | 16 | Char | |
| 29-32 | NOBC | 4 | Char | |
| 33-36 | NEC | 4 | Char | |
| 37-38 | Priority Code | 2 | Char | |
| 39-41 | RMS Cost Code | 3 | Char | Last 3 digits only |
| 42-43 | Type Course | 2 | Char | |
| 44 | SVC Code | 1 | Char | |
| 45 | Method of Instruction | 1 | Char | |
| 46 | Status Code | 1 | Char | |
| 47-51 | Status Date | 5 | P | P'(5)9' |
| 52 | TRAPS Indicator | 1 | Char | |
| 53-57 | TPC | 5 | Char | |
| 58-60 | Established Attri- tion Rate | 3 | P | P'99V9' |
| 61-63 | Established Set- back Rate | 3 | P | P'99V9' |
| 64-66 | Course Length | 3 | P | P'999' |
| 67-69 | Total Hours | 3 | P | P'999' |

TAEG REPORT NO. 40

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|----------------------------|------------------|---------------|-------------|-----------------------|
| 70-72 | Lab Hours | 3 | P | P'999' |
| 73-79 | Cost Per AOB* | 7 | P | P'(5)9V99' |
| 80 | Filler | 1 | Char | Blank |

*This field currently not loaded; not available on the NITRAS MCRF
Extract Tape.

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 8

NCSS FILENAME/FILETYPE : ETAM/DCIN

MEDIA : DASD

FORMAT : F, 760, 760

CREATED/GENERATED BY : Program P7

CONTENTS PRINTED BY : Not Applicable

FILE FUNCTION : Abbreviated Course File Directory, ordered by
CIN Number

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|----------------------------|--|---------------|-------------|--|
| 1-8 | CIN | 8 | Char | |
| 9-10 | Pointer to Relative Record in Abbrevi- ated Course File (File Number 7) | 2 | Fixed Bin | |
| 11-760 | Repeat of Pos 1-10, Occurs (76) Times Total | 750 | | Unused elements of the Array are blanked (CIN) or zeroed (pointer) |

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 9

NCSS FILENAME/FILETYPE : ETAM/DCDP

MEDIA : DASD

FORMAT : F, 1200, 1200

CREATED/GENERATED BY : Program P7

CONTENTS PRINTED BY : Not Applicable

FILE FUNCTION : Abbreviated Course File Directory, ordered by
CDP Number

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|----------------------------|---|---------------|-------------|---|
| 1-4 | CDP | 4 | Char | |
| 5-6 | Pointer to Related Record in Abbreviated Course File (File Number 7) | 2 | Fixed Bin | |
| 7-1200 | Repeat of Pos (1-6), Occurs 200 Times Total | 1194 | | Unused elements in the array are blanked (CDP) and zeroed (pointer) |

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 10, 11

NCSS FILENAME/FILETYPE : (10) ETAM/VCDESC; (11) ETAM/SVCDESC

MEDIA : DASD

FORMAT : F, 80, 80

CREATED/GENERATED BY : Not Applicable

CONTENTS PRINTED BY : Not Applicable

FILE FUNCTION : Input card deck with Descriptors as assigned to
Vehicle data

The VCDESC card file is the Vehicle Descriptor data as transmitted to the NCSS time-sharing vendor. This file may be in unsorted format.

The SVCDESC file has been sorted into ascending sequence by Vehicle Stock Number. The sort is accomplished by running the executive sequence STARTUP.

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|----------------------------|---------------------------------|---------------|-------------|-----------------------|
| 1-13 | Vehicle Stock Number | 13 | Char | |
| 14 | Filler | 1 | Char | Blank |
| 15-16 | 2-Digit Descriptor | 2 | F(2) | p'99' |
| 17-79 | Pos 14-16, Repeated 21 Times | 63 | | |
| 80 | Filler | 1 | Char | Blank |

Notes - Max of 22 descriptors per card; if full card not required,
leave remainder blank

- Each descriptor is a two-digit number; supply lead zero, if
applicable

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 12

NCSS FILENAME/FILETYPE : ETAM/VDESC

MEDIA : DASD

FORMAT : F, 213, 213

CREATED/GENERATED BY : Program P8

CONTENTS PRINTED BY : Program P20 (Option V)

FILE FUNCTION : Descriptor data to match the contents of the
Abbreviated Vehicle data file (File Number 15)

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|----------------------------|---|---------------|-------------|--|
| 1-13 | Vehicle Stock Number | 13 | Char | |
| 14-213 | Descriptor Flags, Occurs (100) Times | 200 | Fixed Bin | Initially, all 100 flags are zeroed |

Note - Descriptor Flags (subscripted 1 to 100, incl.) are NON-ZERO for those descriptors applicable to the Vehicle keyed by the first 13 characters of the record.

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 13, 14

NCSS FILENAME/FILETYPE : (13) ETAM/VDATA; (14) ETAM/SVDATA

MEDIA : DASD

FORMAT : F, 80, 80

CREATED/GENERATED BY : Not Applicable

CONTENTS PRINTED BY : Not Applicable

FILE FUNCTION : Input card deck with data for the load of the
Abbreviated Vehicle data file

The VDATA card deck is the input file as transmitted to the NCSS time-sharing vendor. This file may be in unsorted order.

The SVDATA file has been sorted into ascending sequence by the Vehicle Stock Number portion of the record. This sort is accomplished by running the executive sequence STARTUP.

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|----------------------------|-------------------------|---------------|-------------|---------------------------------------|
| 1-13 | Vehicle Stock Number | 13 | Char | |
| 14-22 | Vehicle Designator | 9 | Char | |
| 23-69 | Vehicle Nomenclature | 47 | Char | |
| 70-79 | Vehicle Cost | 10 | F(10,2) | P'(8)ZVZZ'; leave blank, if unused |
| 80 | Filler | 1 | Char | Blank |

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 15

NCSS FILENAME/FILETYPE : ETAM/VEHS

MEDIA : DASD

FORMAT : F, 80, 80

CREATED/GENERATED BY : Program P8

CONTENTS PRINTED BY : Program P8A

FILE FUNCTION : Abbreviated Vehicle Data File

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|----------------------------|-------------------------|---------------|-------------|---|
| 1-13 | Vehicle Stock Number | 13 | Char | |
| 14-22 | Device Designator | 9 | Char | |
| 23-69 | Device Name | 47 | Char | |
| 70-79 | Device Cost | 10 | F(10,2) | P'(8)9V99' This field currently not available for all records |
| 80 | Filler | 1 | Char | Blank |

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 16

NCSS FILENAME/FILETYPE : ETAM/DVEH

MEDIA : DASD

FORMAT : F, 750, 750

CREATED/GENERATED BY : Program P8

CONTENTS PRINTED BY : Not Applicable

FILE FUNCTION : Abbreviated Vehicle Directory, ordered by Vehicle
Stock Number

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|----------------------------|--|---------------|-------------|--|
| 1-13 | Vehicle Stock Number | 13 | Char | |
| 14-15 | Pointer to Relative Record in Abbreviated Vehicle File (File Number 15) | 2 | Fixed Bin | |
| 16-750 | Repeat of Pos (1-15), above, Occurs 50 Times Total | 734 | | Unused elements of the array are blanked (Vehicle Stock Number) or zeroed (pointer) |

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 17, 18

NCSS FILENAME/FILETYPE : (17) ETAM/TDSCR; (18) ETAM/STDSCR

MEDIA : DASD

FORMAT : F, 80, 80

CREATED/GENERATED BY : Not Applicable

CONTENTS PRINTED BY : Not Applicable

FILE FUNCTION : Input card deck with Descriptors as assigned to Task data

The TDSCR file is the Task Descriptor data as transmitted to the NCSS time-sharing vendor. This file may be in unsorted sequence.

The STDSCR file has been sorted into ascending sequence by the field represented by the first 13 characters of the record. This sort is accomplished by running the executive sequence STARTUP.

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|------------------------|---------------------------------|---------------|-------------|-----------------------|
| 1-5 | Rating | 5 | Char | |
| 6-7 | Rank | 2 | Char | |
| 8-13 | Jobtask Number | 6 | Char | |
| 14-15 | 2-Digit Descriptor | 2 | F(2) | P'99' |
| 16 | Filler | 1 | Char | Blank |
| 17-79 | Pos 14-16, Repeated 21 Times | 63 | | |
| 80 | Filler | 1 | Char | Blank |

Notes - Max of 22 descriptors per card; if full card not required, leave remainder blank

- Each descriptor is a two-digit number; supply lead zero, if applicable.

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 19

NCSS FILENAME/FILETYPE : ETAM/TDESC

MEDIA : DASD

FORMAT : F, 213, 213

CREATED/GENERATED BY : Program P9

CONTENTS PRINTED BY : Program P20 (Option T)

FILE FUNCTION : Descriptor data to match the contents of the
Abbreviated Task data file (File Number 22)

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|----------------------------|---------------------------------------|---------------|-------------|--|
| 1-5 | Rating | 5 | Char | |
| 6-7 | Rank | 2 | Char | |
| 8-13 | Job Task Number | 6 | Char | |
| 14-213 | Descriptor Flags, Occurs 100 Times | 200 | Fixed Bin | Initially, all 100 flags are zeroed |

Note - Descriptor Flags (subscripted 1 to 100, incl.) are NON-ZERO for those descriptors applicable to the Task keyed by the first 13 characters of the record.

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 20, 21

NCSS FILENAME/FILETYPE : (20) ETAM/TDATA; (21) ETAM/STDATA

MEDIA : DASD

FORMAT : F, 80, 80

CREATED/GENERATED BY : Not Applicable

CONTENTS PRINTED BY : Not Applicable

FILE FUNCTION : Input data deck for the load of the Abbreviated
Task data file

The TDATA deck is the input data as transmitted to the NCSS time-sharing vendor.
This file may be unsorted.

The STDATA file has been sorted into ascending sequence by the field represented
by the first 13 characters of the record. This sort is accomplished by running
the executive sequence STARTUP.

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|----------------------------|------------------|---------------|-------------|---------------------------------------|
| 1-5 | Rating | 5 | Char | |
| 6-7 | Rank | 2 | Char | |
| 8-13 | Jobtask Number | 6 | Char | |
| 14-63 | Job Description | 50 | Char | |
| 64-69 | Filler | 6 | Char | Blank |
| 70-79 | Billet Cost | 10 | F(10,2) | P'(8)ZVZZ'; leave blank, if unused |
| 80 | Filler | 1 | An | Blank |

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 22

NCSS FILENAME/FILETYPE : ETAM/TASKS

MEDIA : DASD

FORMAT : F, 80, 80

CREATED/GENERATED BY : Program P9

CONTENTS PRINTED BY : Program P9A

FILE FUNCTION : Abbreviated Task Data File

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|----------------------------|------------------|---------------|-------------|-----------------------|
| 1-5 | Rating | 5 | Char | |
| 6-7 | Rank | 2 | Char | |
| 8-13 | Jobtask Number | 6 | Char | |
| 14-63 | Job Description | 50 | Char | |
| 64-69 | Filler | 6 | Char | Blank |
| 70-79 | Billet Cost | 10 | F(10,2) | P'(8)9V99' |
| 80 | Filler | 1 | Char | Blank |

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 23

NCSS FILENAME/FILETYPE : ETAM/DTASK

MEDIA : DASD

FORMAT : F, 1500, 1500

CREATED/GENERATED BY : Program P9

CONTENTS PRINTED BY : Not Applicable

FILE FUNCTION : Abbreviated Task File Directory, ordered by the first 13 characters of the Task File record (includes RATING, RANK, and JOBTASK Number)

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|------------------------|--|---------------|-------------|--|
| 1-5 | Rating | 5 | Char | |
| 6-7 | Rank | 2 | Char | |
| 8-13 | Jobtask Indicator | 6 | Char | |
| 14-15 | Pointer to Relative Record in Abbreviated Task File (File #22) | 2 | Fixed Bin | |
| 16-1500 | Repeat of (1-15), Above, Occurs 100 Times Total | 1484 | | Unused elements of the array are blanked (all char fields) or zeroed (pointer) |

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 24

NCSS FILENAME/FILETYPE : Not Applicable

MEDIA : TAPE

FORMAT : FB, 810, 3240, DENSITY = 1600BPI,
STANDARD LABEL

CREATED/GENERATED BY : Not Applicable

CONTENTS PRINTED BY : Not Applicable

FILE FUNCTION : Abbreviated Course file input is selected from this
tape

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|----------------------------|--------------------|---------------|-------------|-----------------------|
| 1-4 | CDP | 4 | Char | |
| 5-12 | CIN | 8 | Char | |
| 13-28 | Course Short Title | 16 | Char | |
| 29-32 | NOBC | 4 | Char | |
| 33-36 | NEC | 4 | Char | |
| 37-39 | Off. Crs. Code | 3 | Char | |
| 40-44 | Priority Des | 5 | Char | |
| 45-48 | RMS Cost Code | 4 | Char | |
| 49-50 | Type Course | 2 | Char | |
| 51 | SVC Supp | 1 | Char | |
| 52 | Method Inst. | 1 | Char | |
| 53-67 | Filler | 15 | Char | |
| 68 | Dept-Code | 1 | Char | |
| 69-71 | Filler | 3 | Char | |
| 72 | Status-Code | 1 | Char | |
| 73-75 | Status-Date | 3 | P | S9(5) COMP-3 |
| 76-83 | Prereq-CIN | 8 | Char | |

TAEG REPORT NO. 40

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|------------------------|---------------------|---------------|-------------|-----------------------|
| 84-85 | Est. Attr. Rate | 2 | P | S99V9 COMP-3 |
| 86-87 | Est. Stbk. Rate | 3 | P | S99V9 COMP-3 |
| 88-90 | Theory Hrs. | 3 | P | S9(5) COMP-3 |
| 91-93 | Lab Hrs. | 3 | P | S9(5) COMP-3 |
| 94-96 | Filler | 3 | Char | |
| 97 | TRAPS Ind. | 1 | Char | |
| 98-102 | TPC | 5 | Char | |
| 103-107 | Stu. UIC | 5 | Char | |
| 108-112 | Staff UIC | 5 | Char | |
| 113-140 (7x) | CRS Contact Hrs | 28 | | |
| | Contact Ratio | 2 | P | S99 COMP-3 |
| | Contact Hours | 2 | P | S999 COMP-3 |
| 141-143 | Total Cont Hrs | 3 | P | S9(5) COMP-3 |
| 144 | CFY-Cross Util | 1 | Char | |
| 145-147 | CFY-Crs Length | 3 | P | S9(5) COMP-3 |
| 148-150 | CFY-Class Frequency | 3 | P | |
| 151-153 | CFY-Pers Input | 3 | P | |
| 154-156 | CFY-Pers Freq | 3 | P | |
| 157-159 | CFY-Equip Input | 3 | P | |
| 160-162 | CFY-Equip Freq | 3 | P | |
| 163-165 | CFY-Space Input | 3 | P | |
| 166-168 | CFY-Space Freq | 3 | P | |
| 169-183 | Filler | 15 | Char | |
| 184-223 | FY+1 Capacities | | | same as Col. 144-183 |
| 224-263 | FY+2 Capacities | | | same as Co. 144-183 |
| 264-286 | CFY OF Plan-USN | 3 | P | S9(5) Comp-3 |
| 267-269 | CFY OF Plan-USNOB | 3 | P | |
| 270-272 | CFY OF Plan-USNR | 3 | P | |

TAEG REPORT NO. 40

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|----------------------------|--------------------|---------------|-------------|---|
| 273-275 | CFY OF Plan-USNRR | 3 | P | |
| 276-278 | CFY OF Plan-USMC | 3 | P | |
| 279-281 | CFY OF Plan-USCG | 3 | P | |
| 282-284 | CFY OF Plan-USA | 3 | P | |
| 285-287 | CFY OF Plan-USAF | 3 | P | |
| 288-290 | CFY OF Plan-NATG | 3 | P | |
| 291-293 | CFY OF Plan-FORNAT | 3 | P | |
| 294-296 | CFY OF Plan-DOD | 3 | P | |
| 297-299 | CFY OF Plan-NDOD | 3 | P | |
| 300-302 | CFY OF Plan-WOM | 3 | P | |
| 303-341 | CFY EN Plan | 39 | | |
| 342-380 | FY+1 OF Plan | 39 | | |
| 381-419 | FY+1 EN Plan | 39 | | |
| 420-458 | FY+2 OF Plan | 39 | | |
| 459-497 | FY+2 EN Plan | 39 | | These fields are all formatted the same as CFY OF PLAN in Col. 264-302 (13.S9(5) COMP-3) |
| 498-536 | FY+3 OF Plan | 39 | | |
| 537-575 | FY+3 EN Plan | 39 | | |
| 576-614 | FY+4 OF Plan | 39 | | |
| 615-653 | FY+4 EN Plan | 39 | | |
| 654-692 | FY+5 OF Plan | 39 | | |
| 693-731 | FY+5 EN Plan | 39 | | |
| 732-770 | FY+6 OF Plan | 39 | | |
| 771-809 | FY+6 EN Plan | 39 | | |
| 810 | Filler | | | |

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 25

NCSS FILENAME/FILETYPE : Projectname/LOAD

MEDIA : DASD

FORMAT : F, 80, 80

CREATED/GENERATED BY : Not Applicable

CONTENTS PRINTED BY : Program P1, P2

FILE FUNCTION : Load card file for any/all files of a given project

| Record Position | Data Name | Length | Type | Value/Comments |
|--------------------|-----------|--------|------|----------------|
|--------------------|-----------|--------|------|----------------|

This is the load deck for one or more project files; Program P17 loads the indicated files by reference to control cards present in the load deck. The control cards are:

Initialize Card: If present, must be the first card of the deck. Signals program P17 to load (initialize) all project files (card-image only).

| | | | | |
|------|---------------|----|------|--------|
| 1-4 | Control Field | 4 | Char | "INIT" |
| 5-80 | Filler | 76 | Char | Blank |

File Card: Indicates that all cards following, up to the next file card or the end-of-file, are to be loaded to the indicated file.

| | | | | |
|-----|-------------------------------|---|------|------|
| 1-2 | Control Field | 2 | Char | "**" |
| 4-7 | Filetype; legal Files are: | 4 | Char | |
| | ID | | | |
| | REC | | | |
| | REV | | | |
| | REJ | | | |
| | EXD | | | |
| | BPT | | | |
| | RKP | | | |
| | RRPJ | | | |
| | RRPK | | | |
| | VQAL | | | |
| | VARF | | | |
| | SCEN | | | |
| | ALTP | | | |

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 26

NCSS FILENAME/FILETYPE : Projectname/ID

MEDIA : DASD

FORMAT : F, 80, 80

CREATED/GENERATED BY : Program P17

CONTENTS PRINTED BY : Program P17, P1

FILE FUNCTION : Project Identification Information

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|----------------------------|---|---------------|-------------|-----------------------|
| 1-80 | Descriptive information related to a specific project | 80 | Char | |

All of the records of this file are free-format except for the first card-image; the format for the first card is:

| | | |
|-------|---------------|----|
| 1-1 | Project ID | 10 |
| 11-80 | Project Title | 70 |

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 27, 28, 29

NCSS FILENAME/FILETYPE : (27) Projectname/REC
 (28) Projectname/REV
 (29) Projectname/REJ

MEDIA : DASD

FORMAT : F,80,80

CREATED/GENERATED BY : Program P17

CONTENTS PRINTED BY : Program P1

FILE FUNCTION : Search Descriptor Arguments for Courses (REC),
 Vehicles (REV), and Tasks (REJ)

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|----------------------------|-------------------|---------------|-------------|--|
| 1-10 | Descriptor Number | 10 | Char | 1/2 Digit Number, Optionally Signed; If Signed, No Blank Between Sign and Leftmost Digit |
| 11-80 | Filler | 70 | Char | Can Be Used as Comment, If Desired- Not Machine Processable |

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 30

NCSS FILENAME/FILETYPE : Projectname/SARG

MEDIA : DASD

FORMAT : F,240,240

CREATED/GENERATED BY : Program P2

CONTENTS PRINTED BY : Not Applicable

FILE FUNCTION : Search Argument input to the Range-of-Effects
Program P3

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|----------------------------|--|---------------|-------------|-----------------------|
| 1-8 below | Record Type | 8 | Char | See notes, |
| 9-10 | Total Number of Active Descriptor Search Arguments | 2 | Fixed Bin | |
| 11-240 | Fixed Bin Array, Occurs 115 Times | 230 | Fixed Bin | |

Notes Record type will be indicated by one of the words 'courses', 'vehicles', 'tasks'; there are 3 records in this file, in order as shown.

- For each entity (Courses, Vehicles or Tasks), the numeric array will be zeroed except for those positions which indicate a search designator. The subscript of a non-zero position indicates the designator number. The non-zero contents will be positive for a normal argument, or negative for a "NOT" argument.

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 31, 32

NCSS FILENAME/FILETYPE : (31) Projectname/RESU
(32) Projectname/REE

MEDIA : DASD

FORMAT : F, 16, 16

CREATED/GENERATED BY : (RESU) by Program P3
(REE) by Program P5B

CONTENTS PRINTED BY : P1

FILE FUNCTION : RESU is the un-edited output of the Range-of-
Effects Search Program P3; REE is the edited
output of Program P5B

| <u>Record Position</u> | <u>Data Name</u> | <u>Length</u> | <u>Type</u> | <u>Value/Comments</u> |
|----------------------------|-----------------------------------|---------------|-------------|--|
| 1 | Record Type | 1 | Char | P'9' 1 = Course 2 = Vehicle 3 = Task |
| 2 | Record Status | 1 | Char | P'9' 1 = Original Search Result 2 = Added Via Interactive Program 5B 3 = Deleted Via Program P5B |
| 3 | Abbreviated Data Status | 1 | Char | P'9' 1 = Abbreviated Data is Available 2 = No Data Match in Current Abbr File |
| 4-16 | Entity Identifier, As Follows: | 13 | Char | |
| | Courses: 4-11 CIN | 8 | | |
| | 12-15 CDP | 4 | | |
| | if available | | | |
| | 16 Filler | 1 | | |
| | Vehicles: 4-16 Veh | 13 | | |
| | Stock No. | | | |
| | Tasks : 4-8 Rating | 5 | | |
| | 9-10 Rank | 2 | | |
| | 11-16 Jobtask | 6 | | |
| | Number | | | |

TAEG REPORT NO. 40

FILE REFERENCE NUMBER : 33, 34, 35, 36, 37, 38, 39, 40, 41

NCSS FILENAME/FILETYPE : (33) Projectname/EXD
(34) Projectname/BPT
(35) Projectname/RKP
(36) Projectname/RRPJ
(37) Projectname/RRPK
(38) Projectname/VQAL
(39) Projectname/VARF
(40) Projectname/SCEN
(41) Projectname/ALTP

MEDIA : DASD

FORMAT : F, 80, 80

CREATED/GENERATED BY : Program P17

CONTENTS PRINTED BY : Program P1

FILE FUNCTION : Miscellaneous card-image files; can be initialized
by Program P17

None of these files perform a functional task in the Range-of-Effects search portion of ETAM. Their function is explained in previous section of this document that present the system design for those segments of ETAM that are to follow the ROE search.

Since these are card-files, they may initialized by providing proper input to the Project File Initialization Program (P17).

SECTION D.5

MISCELLANEOUS CONTROL CARD SOURCE LISTINGS

Following are listings of the control card sequences used to build the current ETAM Range-of-Effects system at the NCSS time-sharing vendor.

All control decks are NCSS filename = ETAM. They are presented within this section in alphabetic order by filetype. Refer to the File Reference Number as indicated in the following table for the specific format of each control deck.

| <u>Filename</u> | <u>Filetype</u> | <u>File Reference Number</u> | <u>Usage</u> |
|-----------------|-----------------|--------------------------------------|--|
| ETAM | CDESC | 4 | Course Descriptor data, as transmitted to the NCSS time-sharing vendor's computer site |
| ETAM | COURSE | 7 | This is the Abbreviated Course File; normally, this is output from Program P14. To conserve time, use of the complete NITRAS MCRF Extract tape and P14 were bypassed |
| ETAM | DICRDS | 2 | Control card input for the generation of the Descriptor Master Index File (File Number 3, ETAM/DIND) |
| ETAM | TDATA | 20 | Data load for the Abbreviated Task data file (File Reference 22) |
| ETAM | TDSCR | 17 | Data load for the Descriptor information associated with Task type entities |
| ETAM | VCDESC | 10 | Descriptor load data for entity type Vehicles |
| ETAM | VDATA | 13 | Data load for the Abbreviated Vehicle data file (File Reference 15) |

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SOURCE CARD LISTING FOR
OFFLINE READ ETAM CODES

| LINE | OFFLINE READ | ETAM | CODES |
|------|--------------|----------|--|
| 1 | H 2E3710 | 01 02 03 | 10 12 13 20 21 30 40 44 46 49 52 64 66 69 72 84 85 |
| 2 | H 2E3925 | 01 02 03 | 10 12 13 20 22 33 40 43 46 49 52 61 62 63 64 65 66 69 72 85 |
| 3 | G 2E6435 | 01 02 03 | 12 13 20 21 22 33 40 41 43 44 46 47 49 52 61 62 63 65 72 84 |
| 4 | A 2G0014 | 01 02 03 | 12 33 41 42 44 45 48 52 53 65 69 82 84 |
| 5 | J 2G0535 | 01 02 03 | 10 11 12 13 20 21 33 41 44 46 49 52 61 62 63 64 65 72 80 81 |
| 6 | J 2G0535 | 82 85 | |
| 7 | D 3A0010 | 01 02 03 | 12 13 20 21 33 42 45 48 49 53 63 65 82 |
| 8 | A 8C0015 | 01 05 12 | 20 32 80 |
| 9 | C 6023536 | 03 11 12 | 13 31 40 42 43 45 46 48 49 64 65 68 84 |
| 10 | J 6440914 | 01 02 03 | 04 20 21 32 33 42 45 48 49 53 60 65 66 69 82 |
| 11 | E 6461641 | 03 04 05 | 11 12 13 20 31 40 42 44 45 46 48 49 52 53 62 64 65 80 81 84 |
| 12 | C 6463103 | 02 03 04 | 10 12 31 32 33 80 |
| 13 | A 6510010 | 03 11 12 | 13 31 80 81 |
| 14 | A 6510020 | 03 10 11 | 12 13 20 21 31 64 65 84 |
| 15 | A 6520050 | 11 12 13 | 30 31 40 41 42 43 44 45 46 47 48 49 62 63 64 65 84 |
| 16 | A 6520068 | 05 11 12 | 13 31 40 44 46 64 65 84 |
| 17 | J 6520474 | 03 05 11 | 13 30 71 80 |
| 18 | G 6526160 | 01 02 03 | 12 13 30 33 40 42 43 45 46 48 49 71 80 81 |
| 19 | L 6610056 | 03 11 12 | 13 31 40 43 46 49 52 62 63 64 65 85 |
| 20 | A 6700011 | 11 12 13 | 20 31 61 62 64 68 85 |
| 21 | A 6700025 | 05 10 11 | 12 13 20 32 42 45 48 64 82 |
| 22 | F 7000010 | 12 13 20 | 22 31 40 44 46 49 52 64 66 68 85 |
| 23 | A 7010027 | 10 11 13 | 20 22 31 40 43 46 49 51 61 62 64 66 68 86 |
| 24 | N 7010320 | 03 05 10 | 11 12 13 20 31 40 44 46 49 51 61 62 63 64 85 |
| 25 | A 7020024 | 31 40 43 | 46 49 51 61 62 66 68 86 |
| 26 | A 7100016 | 01 02 03 | 04 10 11 12 13 20 21 32 33 42 45 48 49 53 62 63 65 66 82 |
| 27 | A 7200013 | 02 03 11 | 12 13 31 33 63 64 69 84 |
| 28 | A 7120011 | 12 13 20 | 40 43 46 49 52 60 66 68 86 |
| 29 | E 2A10011 | 11 12 13 | 30 40 42 43 45 46 48 49 51 53 60 61 64 65 67 70 71 86 87 |
| 30 | E 2A1301 | 01 05 10 | 11 12 13 20 30 40 42 43 45 46 48 49 51 53 60 61 62 63 64 65 70 |
| 31 | E 2A1301 | 71 86 | |
| 32 | E 2A1803 | 01 03 04 | 10 11 12 13 30 40 42 43 45 46 48 49 51 53 60 61 62 64 65 67 70 |
| 33 | E 2A1803 | 86 | |
| 34 | E 2A1902 | 01 02 03 | 05 10 11 12 13 20 30 42 45 48 49 51 60 61 62 63 64 65 67 71 72 |
| 35 | E 2A1902 | 86 87 | |
| 36 | C 2A3502 | 10 13 30 | 42 45 48 49 53 71 89 |
| 37 | C 2A3921 | 12 13 30 | 42 45 48 49 53 71 89 |
| 38 | C 2A3531 | 13 30 42 | 45 48 50 53 80 |
| 39 | C 2A3831 | 01 12 30 | 42 45 48 50 53 80 |
| 40 | D 2C0010 | 01 03 05 | 11 12 13 20 30 40 42 45 48 53 72 80 |
| 41 | D 2C0011 | 01 02 03 | 11 12 13 30 40 42 43 45 46 48 49 51 53 60 63 64 69 72 80 85 |
| 42 | E 2C0012 | 01 02 03 | 11 12 13 30 42 45 48 53 72 80 |
| 43 | E 2C0015 | 03 11 12 | 13 20 30 40 43 46 49 51 64 67 68 85 |
| 44 | Q 2C0901 | 01 02 03 | 11 12 13 20 30 40 42 43 45 46 48 49 51 53 61 62 63 64 67 69 72 |
| 45 | E 2C0901 | 85 86 | |
| 46 | E 2C3352 | 01 03 05 | 12 30 80 |
| 47 | E 2D0016 | 01 02 03 | 05 80 |
| 48 | E 2D0028 | 03 11 12 | 13 20 22 30 41 42 44 45 47 48 53 72 80 83 |
| 49 | E 2D0032 | 01 02 03 | 11 12 13 30 41 42 44 45 47 52 53 72 80 82 84 |
| 50 | E 2D0047 | 01 03 04 | 10 12 13 20 21 30 42 45 48 53 60 64 65 66 72 82 |
| 51 | E 2D0072 | 01 03 05 | 12 13 30 42 45 48 53 62 63 65 71 80 84 |
| 52 | E 2D0075 | 01 03 10 | 11 12 13 20 30 40 44 49 52 62 63 64 82 84 |
| 53 | E 2D1302 | 30 41 44 | 47 49 52 61 62 63 67 71 85 87 |
| 54 | E 2D1601 | 30 41 44 | 47 49 52 61 62 63 64 65 67 72 86 |
| 55 | E 2E0013 | 01 02 03 | 10 21 33 65 80 82 |
| 56 | J 2E0100 | 01 03 05 | 10 11 12 13 20 21 30 42 45 48 53 62 64 65 71 80 83 |
| 57 | K 2E1078 | 01 02 03 | 05 10 12 21 33 42 45 49 53 65 66 72 82 |
| 58 | B 3010033 | 02 03 04 | 10 11 12 13 30 32 42 45 46 49 53 61 62 63 64 69 83 84 |
| 59 | B 3030051 | 02 03 05 | 10 11 12 13 20 22 30 32 40 42 43 45 46 48 49 52 62 63 64 66 |
| 60 | B 3030051 | 68 69 84 | |
| 61 | A 4120010 | 01 02 03 | 05 11 12 13 20 22 30 32 40 42 43 45 46 48 49 53 62 63 64 66 |
| 62 | A 4120010 | 80 81 82 | 83 84 |
| 63 | C 4202011 | 03 05 11 | 12 13 20 21 30 32 42 45 48 49 53 63 64 65 83 |
| 64 | A 4A0025 | 03 12 21 | 22 33 80 |
| 65 | A 4310011 | 01 03 05 | 10 11 12 13 20 21 22 30 40 41 43 44 46 47 49 52 60 61 62 63 |
| 66 | A 4310011 | 64 66 68 | 84 |
| 67 | A 4310014 | 01 03 13 | 20 22 30 64 65 66 72 86 89 |
| 68 | | | |

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SOURCE CARD LISTING FOR
OFFLINE READ ETAM CDESC

[illegible]

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SOURCE CARD LISTING FOR OFFLINE READ ETAM COURSE

| | | | |
|----|------------------------------|---------------|---|
| 1 | OFFLINE READ ETAM COURSE | | |
| 2 | 0327A 000111SWO ADV COMMAND | 0000 | PDBC21LA000000T043500010010402240160000000 |
| 3 | 0303A 2E0013TAL PCO/PXO ORI | 0000000012 | KBAC21PA62171 0325000000001208000000000000 |
| 4 | 0143A 2G0014MINE C/M OFF | 92680000025 | CCBC21LA72183 04311000000003312003000000000 |
| 5 | 2131A 8C0015WAREHOUSE OPS | 00000000024 | FAAF21L 63203 061400050050050350000000000 |
| 6 | 516UA1010108WRA-4 CMB MA | 00000002 | MBDF11L 00000 4142205000000502100900000000 |
| 7 | 5535A1010108WRA-4 CMB /FINIS | 00000001 | FCAC11 00000 041110700000120000000000000 |
| 8 | 7654A1010108WRA-4 CMB MA | 0000000002 | BBOF11LA75191 414230500000120340240000000 |
| 9 | 2213A1930050INERT NAV PRINC | 00000007 | FCAC11 00000 414210000000190000000000000 |
| 10 | 6529A2420010IS A | 0000014 | MBBA12L 00000 061101000000720000000000000 |
| 11 | 6078A4120010EA-A | 0000026 | ACBA11 00000 033500700300810000000000000 |
| 12 | 6287A4120010EA A | 00000000026 | MCBA11L 00000 033500700300810000000000000 |
| 13 | 1035A4310011EOD BASIC NAVY | 9230533225 | BBCB11LA74182 043803202602693987500000000 |
| 14 | 1036A4310014EOD REFR NAVY | 00000000023 | BBCB11LA74182 043800100500470920750000000 |
| 15 | 2040A4330019MASTER DIVQUAL | 534125 | ABJC11LA70181 043702000050361140680000000 |
| 16 | 2082A4330025DIVER FIRST | 534223 | ABKC11LA70181 043700300051205141410000000 |
| 17 | 204GA4910014RADIUM REMOV OPS | 00000000 | F11L 00000 001520000000050240380000000 |
| 18 | 3192A5000011CIA | 958920 | DFCC11L 00000 061301300200260000000000000 |
| 19 | 3193A5000011CIA | 0000958920 | EDCC11LA70135 061301300200240560580000000 |
| 20 | 2398A50000283M COORD | 0000951213 | DEAC11PA74189 033300000000050000000000000 |
| 21 | 461WA50000283M COORD | 0000951213 | C11L 00000 033300000000050000000000000 |
| 22 | 2010A50000320VRSEA DIPL COOR | 0000000000029 | UCOF11LA74120 062100100000050180170000000 |
| 23 | 202MA50000320VRSEA DIPL COOR | 00000000000 | KBBF11 00000 062100500000080000000000000 |
| 24 | 2601A50000320SEAS DIPL COORD | 00000000000 | DAAF11 00000 0621000000000503500000000 |
| 25 | 539JA50000320VRSEA DIPL COOR | 0000 | QBHF11LA74251 062100300000100250150000000 |
| 26 | 6057A5100012YN A | 000023 | SCDA11PA74252T 061301905000480002100000000 |
| 27 | 470PA5320015COBOL PROGRAMING | 0000274221 | C14P 00000 031400200200330000000000000 |
| 28 | 4717A5420014OK C RETURNS | 0000260 | DGBF11LA71305 061401000050120300300000000 |
| 29 | 0133A5510019CAR HAND BAS | 000031 | DBKF11L 00000 033200000000050200200000000 |
| 30 | 3931A5510027UNREP MECH/HYD | 429505 | DBDC11L 00000 0332000500000261123480000000 |
| 31 | 0134A5510068FORC LIFT OPER | 000031 | DBDF11L 00000 033200000000030040160000000 |
| 32 | 3249A5700010BROADCAST SPEC | 322126 | C18 00000 061301000000750000000000000 |
| 33 | 6053A5800016CTO A | 48MD17 | QCBA31PA47305 034001705001172402700000000 |
| 34 | 6069A6510010BT A /FINIS | 000004 | JGAA11P 00000 033101001000190000000000000 |
| 35 | 6260A6510010BT A | 0000000004 | JGAA11P 00000 033101001000530000000000000 |
| 36 | 4138A6510020BT 1200 PSI | 0000452305 | YBDC11BA74182 033100300600541231750000000 |
| 37 | 5399A65100201200 PSI BT | 452307 | PCEC11L 00000 043500010010611361090000000 |
| 38 | 5224A65200500X GENR 6L160P | 0000425212 | FBAAC11LA73226 414410500000190380490000000 |
| 39 | 463EA6520068SOLAR GAS TURBIN | 00000000007 | JEAC11LA75279T 033401000000190380530000000 |
| 40 | 3078A6700011WATCH REPAIR | 181207 | EDAC11 00000T 031120300000820004200000000 |
| 41 | 2121A6700025PREC PHY MEAS | 182107 | MBDC12L 00000 031100200100781222080000000 |
| 42 | 3202A7010027WELD/HPRES PIPE | 0000495519 | BDEC11LA75033 033201500200685282900000000 |
| 43 | 337MA7010027WELD/HPRES PIPE | 495519 | C11 00000 033201500200540000000000000 |
| 44 | 351JA7020024MR/C/PH3/PRCGRND | 00000000023 | BBCG11LA76085 033201201000330581030000000 |
| 45 | 3205A7100016GRPVIII ADV MGMT | 0000226 | EEAC11LA75136 033500200100401980000000000 |
| 46 | 346FA7120011BU MILLWORKER | 590425 | ABDC11 00000 033501000100610000000000000 |
| 47 | 351QA7120011BU MILLWORKER | 0000590425 | MBDC11L 00000 033501000100610000000000000 |
| 48 | 4028A7200013UT-J | 000027 | CCCC71 00000 033500900100930000000000000 |
| 49 | 466ZA7200013UT-J | 00000000027 | NBCC71L 00000 033500900100930000000000000 |
| 50 | 9750C 003491C2A A/C FAM | 00000000005 | NSAF21LA73032 042200300000100530000000000 |
| 51 | 2887C 003722TA4JF FAM PILOTS | 00000000005 | NEAF21LA76114 042200300000003016000000000 |
| 52 | 9007C 003722TA4JF FAM PILOTS | 0000005 | NMAF21LA73305 042200300000003016000000000 |
| 53 | 9009C 003722TA4JF FAM PILOTS | 0000005 | N3AF24LA73305 042200300000003016000000000 |
| 54 | 9010C 003722TA4JF FAM PILOTS | 0000005 | NRAF21LA73305 042200300000003016000000000 |
| 55 | 9738C 003722TA4JF FAM PILOTS | 00000000005 | NZAF21LA73305 042200300000003016000000000 |
| 56 | 9033C 003807F4J AWG10 MSL | 000001 | NFAF24LA74121 04220030000000402000700000000 |
| 57 | 9051C 2A3502KC130F PILOT REF | 000005 | F24LA72092 04220030000000201400000000000 |
| 58 | 9751C 2A3531P3 FAM PILOTS | 00000000001 | NKAF21LA72306 04220030000000402700000000000 |
| 59 | 2374C 2A3831F/RF48/J/N FAM | 00000000001 | NWAF21LA74121 042200300000005027000000000 |
| 60 | 540MC 2A3831F/RF48/N/J FAM | 00000000001 | NSAF21LA74121 042200300000005027000000000 |
| 61 | 540NC 2A3831F/RF48/N/J FAM | 00000000001 | NFAF24LA74121 042200300000005027000000000 |
| 62 | 9062C 2A3831F/RE-48/N/J FAM | 000001 | LNIAF24LA74121 042200300000005027000000000 |
| 63 | 2576C 2C3352UH1N A/C FAM/P/ | 00000000006 | NIAF24LA72275 042200300000004027000000000 |
| 64 | 7529C1003834AAS18 INT MAI | 000001 | NIAC14LA71091 042200300000026133000000000 |
| 65 | 7914C1023793A7AB ATT HEADING | 710501 | INDAC11LA74060 042200300000100270230000000 |
| 66 | 7915C1023793A7AB ATT HEADING | 710501 | INPAC11LA74060 042200300000100270230000000 |
| 67 | 346LC1213011AWM23 RADIO FREQ | 798401 | NSAC11LA75329 042200300000129152282000000 |
| 68 | 544LC1213011AWM23 RADIO FREQ | 00000798401 | NWAC11LA75345 042200300000089152282000000 |

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SOURCE CARD LISTING FOR
OFFLINE READ ETAM COURSE

| | | |
|-----|------------------------------|--|
| 69 | 6278C2222010AC A1 | 0000692212F8BA11PA75056T042501502500961962220000000 |
| 70 | 4510C4202011MOAF C7 | 741221PBCC71L 00000 0421010002012364006000000000 |
| 71 | 2717C5163203AVI MAI MATERIAL | 0000001N4AF11 A75260 042200300000004032000000000000 |
| 72 | 321XC5163203AVI MAI MATERIAL | 000004NPAF11LA75244 042200300000005028000000000000 |
| 73 | 3212C5163203AVI MAI MATERIAL | 000004N2AF11LA75244 042200300000005028000000000000 |
| 74 | 3228C5163203AVI MAI MATERIAL | 000004NDAF11LA75244 042200300000005028000000000000 |
| 75 | 322DC5163203AVI MAI MATERIAL | 000004NUAF11LA75244 042200300000005028000000000000 |
| 76 | 322EC5163203AVI MAI MATERIAL | 000004NVAF11LA75244 042200300000005028000000000000 |
| 77 | 4964C6003358PWR TRN ROTORS | 000001 F14 00000 042200000000012000000000000000 |
| 78 | 340CC6003472E2C WEA SYS FAM | 000001NUAF11LA75152 042200300000005034000000000000 |
| 79 | 7540C6003831RF4 AC MECH MAI | 000001NFAC14LA75060 0422003000000170750120000000 |
| 80 | 7541C6003831RF4AC MECH MAI | 000001NIAC14LA75060 0422003000000170750120000000 |
| 81 | 7938C6023353AH1J ELEC ORG | 000001NIAF14LA72306 0422003000000120390280000000 |
| 82 | 204EC6023482E2C VAPOR CYCLE | 0000000001NUAF11LA74335 042200300000005034000000000000 |
| 83 | 2667C6023482E2C VAPOR CYCLE | 0000000001NSAF11LA74335 042200300000005034000000000000 |
| 84 | 2671C602353654H6077 PROP INT | 0000000001NKAF11LA74335 0422003000000100220280000000 |
| 85 | 341DC602353654H6077 PROP INT | 000001NTAF11LA74335 0422003000000100220280000000 |
| 86 | 349HC6463103CVA/CV ALW SUPV | 0000000001NVAF11LA74152 0422003000000120590070000000 |
| 87 | 349KC6463103CVA/CV ALW SUPV | 0000000001NUAF11LA74152 0422003000000120590070000000 |
| 88 | 7365C6463103CVA/CV ALW SUPV | 000001NCAF11LA74152 0422003000000120590070000000 |
| 89 | 9279J 2E0100WEAPONS DEPT OFF | 00000000022GEBC21LA70203 TLANB000000002609303400000000 |
| 90 | 528EJ2210303ECM/ECCM | 0000000020ECCF11LA72213 TLANB000000000502401100000000 |
| 91 | 534AJ2210303JAM RECOG & ECM | 000010DBCF11LA73222 TLANG000000000503000700000000 |
| 92 | 538PJ2210310CIC TEAM TRAIN | 00000000010ECDF11LA72192 TLANB000000000500602900000000 |
| 93 | 526KJ2210344NAVIG CIC TM TRG | 00000000013YHMF11LA74070T TLANT0300600030070140000000 |
| 94 | 528HJ2210344RADNAV TEAM TRNG | 00000000016ECGF11LA70187 TLANB000000000500802700000000 |
| 95 | 528JJ2210348CATCC TEAM TRNG | 00000000020ECJF11LA71187 TLANB000000000500203300000000 |
| 96 | 533PJ2210357CIC TEAM TRNG | 0000000005YHGF11LA74080T TLANT0300600030040140000000 |
| 97 | 538QJ2210357MULTI-THREAT TNG | 00000000014ECQF11LA70194 TLANB000000000500602900000000 |
| 98 | 2637J2330203ADV EW OP'S CRSE | 0000000000 DNAF11LA75321 000000000500000000000000 |
| 99 | 205WJ2330211SURFACE EW SUPVR | 000000000007YEJF11LA75182T TLANT0300600100410150000000 |
| 100 | 525UJ2330211SURFACE EW SUPVR | 00000000014FCCF11LA75174 TLANB050000001004100700000000 |
| 101 | 5324J2330211SURF EW SUP | 000012AAAF11 00000 TLANH000000000805600000000000 |
| 102 | 5332J2330211SURF EW SUPVR | 000010DBCF11LA72183 TLANG000000001004000800000000 |
| 103 | 542NJ2330211SURFACE EW SUPVR | 0000021000F21 A75135 TLANT0300000120300300000000 |
| 104 | 2181J2430974IPC | 000007LBMF11 00000 TLAND000000000501701600000000 |
| 105 | 265VJ2500313DD963 OP/WEP CON | 0000000000 DFBF11 P76082 000000000500000000000000 |
| 106 | 266CJ2500313DD963 OP/WEP INT | 00000000007ZAAF1 A76082 TLANT030060005030000000000000 |
| 107 | 1034J6440914MAUW NUWEAPS | 077122500C11LA75303 TLAN 0100050120600100000000 |
| 108 | 8178J6520474EN BASIC-NONMAG | 000023FBCC11LA72183 TLANG000000001908600400000000 |
| 109 | 9740K 2E1078C003D ASW PT II | 00000000012TBZF21LA75209 P00220300000050210140000000 |
| 110 | 5599K2210042ASIS-LCC | 00000000032YLJC11LA75001TP00210300600190380320000000 |
| 111 | 5342K2220035CATCC NTDS | 00000000009YHJF11LA73182TP00210300600120200500000000 |
| 112 | 205YK2330066SUB EW OP-ADV | 00000000007YEMF11LA75182TP02110300600050190160000000 |

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1 OFFLINE READ ETAM DICRDS
2 -- COURSES
3 ** REFERENCE KNOWLEDGE
4 01 SYSTEM PURPOSES
5 02 ORGANIZATIONAL ROLES
6 03 CONTEXTS OF OPERATION
7 04 ORGANIZATIONAL RULES
8 05 OTHER
9 ** ENABLING KNOWLEDGE
10 10 OPERATIONAL GOAL CRITERIA
11 11 NOMENCLATURE, IDENTIFICATION, LOCATION
12 12 PROCEDURAL DESCRIPTIONS
13 13 JOB RELEVANT FACTS, RULES
14 14 OTHER
15 ** TASK FORMATS
16 20 PROCEDURE FORMATS
17 21 DECISION FORMATS
18 22 CONSTRUCTION FORMATS
19 23 OTHER
20 ** GROSS JOB CATEGORIES
21 30 OPERATIONS
22 31 MAINTENANCE
23 32 SERVICE & ADMINISTRATION
24 33 COMMAND
25 34 OTHER
26 ** OBJECTIVE TASK VARIABLES AS MANIFEST IN THE TRAINING
27 40 EQUIPMENT & OBJECTS USED: REAL
28 41 EQUIPMENT & OBJECTS USED: SIMULATED
29 42 EQUIPMENT & OBJECTS USED: SYMBOLIC
30 43 ENVIRONMENTS IN WHICH TASK IS TRAINED: REAL
31 44 ENVIRONMENTS IN WHICH TASK IS TRAINED: SIMULATED
32 45 ENVIRONMENTS IN WHICH TASK IS TRAINED: SYMBOLIC
33 46 TOOLS/INSTRUMENTS USED IN TRAINING: REAL
34 47 TOOLS/INSTRUMENTS USED IN TRAINING: SIMULATED
35 48 TOOLS/INSTRUMENTS USED IN TRAINING: SYMBOLIC
36 49 REF/ENABLING INFO IN DOING TASK: APPLIED
37 50 REF/ENABLING INFO IN DOING TASK: NOT APPLIED
38 51 CRITERIA OF TASK PERFORMANCE: REAL
39 52 CRITERIA OF TASK PERFORMANCE: SIMULATED
40 53 CRITERIA OF TASK PERFORMANCE: SYMBOLIC
41 ** TASK FUNCTIONS DOMINANT IN TRAINING
42 60 GOAL PROJECTION
43 61 SCAN-DETECT
44 62 IDENTIFY
45 63 INTERPRET
46 64 PROCEDURE FOLLOWING
47 65 DECIDE
48 66 CONSTRUCT, PLAN
49 67 TRACK
50 68 MOTOR PERFORMANCE
51 69 INTERPERSONAL INTERACTION
52 70 RECALL TASK-CYCLE INFORMATION
53 71 RECALL ENABLING INFORMATION
54 72 ADAPT IMPROVISATIONALLY/IMPROMPTU
55 73 OTHER
56 ** STAGE OF LEARNING
57 80 ORIENTATION, FAMILIARIZATION
58 81 TASK NOMENCLATURE, IDENTS, LOCATIONS, FACTS, RULES
59 82 TASK FORMATS AT CONCEPTUAL LEVEL
60 83 PROCEDURES AT VERBAL LEVEL ONLY
61 84 TASK COMPONENTS WITH GUIDANCE
62 85 ENTIRE JOB-TASK PROCEDURALLY AT BARELY ACCEPTABLE MASTERY
63 86 HIGHLY PROFICIENT IN WORK CONTEXT
64 87 UNUSUAL TASK CONDITIONS
65 88 PERFORMANCE AT KEY MAN LEVEL
66 89 REFRESHER LEARNING
67 -- VEHICLES
68 ** VEHICLE TYPES

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69 01 INSTRUCTOR
70 02 STATIC GRAPHICS
71 03 ANIMATED GRAPHICS
72 04 AUDIO
73 05 PHYSICAL MODELS
74 06 PROCEDURAL TRAINERS: SYMBOLIC
75 07 PROCEDURAL TRAINERS: PHYSICAL BUT NON-FUNCTIONAL
76 08 PROCEDURAL TRAINERS: FUNCTIONAL
77 09 TASK & SYSTEM SIMULATORS
78 10 REAL EQUIPMENT ITSELF
79 ** CLASS OF TRAINING OBJECTIVE
80 11 REFERENCE KNOWLEDGE
81 12 KNOWLEDGE, TASK SPECIFIC/ENABLING
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83 14 SKILL TRAINING
84 ** VEHICLE PROPERTIES
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88 24 TACTILE
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90 31 TEXT-VERBAL
91 32 DIAGRAMMATIC
92 33 ABSTRACTED PICTORIAL REPRESENTATION
93 34 PICTORIAL REPRESENTATIONS
94 35 PHYSICAL REPRESENTATIONS
95 36 OTHER
96 ** TYPE OF PRESENTATIONAL SEQUENCE
97 41 LIBRARY OF FRAMES OR ITEMS
98 42 PRESENTATION SEQUENCE NOT APPLICABLE
99 43 FIXED SEQUENTIAL FRAMES OR ITEMS
100 44 RANDOM SELECTION OF FRAME SEQUENCES
101 45 DYNAMIC CHANGE OF CONTENT WITHIN FRAME
102 ** SELECTION SOURCE FOR SEQUENCING
103 51 INTERNAL PROGRAM
104 52 INSTRUCTOR
105 53 STUDENT CHOICE
106 54 STUDENT PERFORMANCE
107 55 COMBINATIONS OF THE ABOVE
108 ** TYPE OF EXTERNAL CONTROL OPERATED BY STUDENT
109 61 NOT APPLICABLE DIRECTLY
110 62 ARTIFICIAL OR SYMBOLIC RESPONSE
111 63 REPRESENTATIONAL RESPONSE BY SYMBOLIC SELECTION
112 64 REPRESENTATIONAL RESPONSE BY DUMMY CONTROL ACTIVATION
113 65 TASK-MANIPULATIVE RESPONSE, NON-DYNAMIC IN TIME AND FORCE
114 66 TASK-MANIPULATIVE RESPONSE, DYNAMIC AND INTERACTIVE
115 ** FEEDBACK PRESENTATION LOGIC
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118 73 GIVES EVALUATION OF PRECEDING RESPONSE
119 74 SELECTS AND PRESENTS GUIDANCE INFO
120 ** RESPONSE EVALUATION LOGIC
121 81 NOT INTERNAL-DEPENDS ON INSTRUCTOR OR STUDENT EVALUATION
122 82 EVALUATION LIMITED TO STUDENT'S IMMEDIATE RESPONSE
123 83 EVALUATION EXTENDED TO A SET OF STUDENT RESPONSES
124 84 TOLERANCE LIMITS ON ACCEPTABLE STUDENT RESPONSE: FIXED
125 85 TOLERANCE LIMITS ON ACCEPTABLE STUDENT RESPONSE: VARIABLE
126 -- TASKS
127 ** ADMINISTRATIVE ROUTINE PAPERWORK
128 01 FORMS FILLING
129 02 DOCUMENT-FILE MANAGEMENT
130 03 DECODE-ENCODE
131 04 SCREEN-FILTER DISTRIBUTE
132 05 OTHER
133 ** ADMINISTRATIVE NON-ROUTINE PAPERWORK
134 11 CONSTRUCT MESSAGES-REPORTS
135 12 ANALYZE-INTERPRET
136 13 CONSTRUCT RECOMMENDATION-PROPOSAL
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| 138 | 15 | OTHER |
| 139 | ** | ADMINISTRATIVE OFFICE EQUIPMENT OPERATION |
| 140 | 21 | TYPEWRITER |
| 141 | 22 | TELEPHONE, ETC. |
| 142 | 23 | REPRODUCER |
| 143 | 24 | COMPUTER TERMINAL |
| 144 | 25 | TELETYPE |
| 145 | 26 | OTHER |
| 146 | ** | INTERPERSONAL: INFORM-INSTRUCT-MANAGE |
| 147 | 31 | BRIEF-DEBRIEF |
| 148 | 32 | INSTRUCT-TRAIN |
| 149 | 33 | ASSIGN, MONITOR, COORDINATE |
| 150 | 34 | EVALUATE |
| 151 | 35 | OTHER |
| 152 | ** | TECHNICAL PROCEDURES |
| 153 | 41 | SEQUENTIAL |
| 154 | 42 | STRATEGIC, ADAPTIVE |
| 155 | 43 | INTERPERSONAL, TEAM MEMBER |
| 156 | 44 | OTHER |
| 157 | ** | TECHNICAL TYPE OF PROCEDURE (MAIN EMPHASIS) |
| 158 | 51 | SCAN-DETECT: SYMBOLIC (INCL. MAPS, RADAR, TRANSDUCED SIGNALS) |
| 159 | 52 | SCAN-DETECT: NATURAL |
| 160 | 53 | IDENTIFY: SYMBOLIC (INCL. TRANSDUCED SIGNALS) |
| 161 | 54 | IDENTIFY: NATURAL |
| 162 | 55 | INTERPRET: SYMBOLIC |
| 163 | 56 | INTERPRET: NATURAL |
| 164 | 57 | PERCEPTUAL-MOTOR |
| 165 | 58 | COGNITIVE OPERATIONS |
| 166 | 59 | MANUAL |
| 167 | 60 | COMMUNICATE |
| 168 | ** | TECHNICAL WITH OR WITHOUT EQUIPMENT |
| 169 | 61 | WITH EQUIPMENT (PAPER IS EQUIPMENT) |
| 170 | 62 | WITHOUT EQUIPMENT |
| 171 | ** | TECHNICAL DECIDE |
| 172 | 71 | DIAGNOSE-ANALYZE |
| 173 | 72 | SELECT-CHOOSE |
| 174 | 73 | UNDER STRESS OR LOAD |
| 175 | 74 | OTHER |
| 176 | ** | TECHNICAL CONSTRUCT-REPAIR, PLAN |
| 177 | 81 | MANUAL CONSTRUCT OR REPAIR |
| 178 | 82 | COGNITIVE CONSTRUCT, PLAN |
| 179 | ** | TECHNICAL TRACK-AIM-STEER |
| 180 | 91 | APPLICABLE |
| 181 | 92 | TIME STRESS |
| 182 | 93 | INFORMATION-LOAD STRESS |

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| 1 | OFFLINE READ | ETAM TDATA |
| 2 | SM | 3 34009 REEVE AND SPLICE HALYARDS |
| 3 | SM | 3 42020 RENDER PASSING AND SIDE HONORS |
| 4 | SM | 3 42021 STAND SIGNAL OPERATOR WATCHES |
| 5 | SM | 3 50303 USE MAINTENANCE REQUIREMENT CARDS (MRC) |
| 6 | SM | 3 50928 COMPLETE MAINTENANCE DATA FORMS |
| 7 | SM | 3 54722 INVENTORY INSTALLED EQUIPMENT |
| 8 | SM | 3 72001 PERFORM ROUTINE MAINTENANCE ON OPTICAL EQUIPMENT |
| 9 | SM | 3 77264 SECURITY OF COMMUNICATIONS CLASSIFIED MATERIAL |
| 10 | SM | 3 84225 OBSERVE COMM. TRANSMISSION SECURITY REQUIREMENTS |
| 11 | SM | 3 86015 RECOGNIZE, USE AND INTERPRET EMERGENCY SIGNALS |
| 12 | SM | 3 86016 TRANSMIT, RECEIVE FLASHING LIGHT CODE AT 6 GPM |
| 13 | SM | 3 86017 TRANSMIT, RECEIVE FLASHING LIGHT PLAIN LANGUAGE |
| 14 | SM | 3 86018 TRANSMIT, RECEIVE SEMAPHORE PLAIN LANGUAGE |
| 15 | SM | 3 86021 DISTINGUISH FLAGHOIST SIGNALS |
| 16 | SM | 3 86022 SELECT AND DISPLAY FLAGS AND PENNANTS |
| 17 | SM | 3 86023 EXERCISE RULES OF VISUAL RESPONSIBILITY |
| 18 | SM | 3 86024 DIRECT A LIFEBOAT DURING MAN OVERBOARD EXERCISE |
| 19 | SM | 3 86025 IDENTIFY FLAGS AND ENSIGNS OF MARITIME NATIONS |
| 20 | SM | 3 86031 PREPARE A VISUAL MESSAGE FOR TRANSMISSION |
| 21 | SM | 3 86035 RECEIVE, SEND MESSAGES ACCORDING TO PRECEDENCE |
| 22 | SM | 3 86036 PERFORM CHALLENGE REPLY PROCEDURES |
| 23 | SM | 3 86038 SIGNALMAN DUTIES AS A MEMBER OF A BOATCREW |
| 24 | SM | 3 86365 OPERATE ELECTRICAL AND ELECTRONIC VISUAL SIGNALS |
| 25 | SM | 3 86366 OPERATE INFRARED AND FLASHING LIGHT EQUIPMENT |
| 26 | SM | 3 94530 ROUTINE UPKEEP OF VISUAL SIGNALING EQUIPMENT |
| 27 | YN | 3 38605 FILE RECORDS AND CORRESPONDENCE |
| 28 | YN | 3 38606 ORDER AND MAINTAIN STOCK OF OFFICE SUPPLIES |
| 29 | YN | 3 38822 PERFORM AS MAST YEOMAN |
| 30 | YN | 3 38823 OPTICAL CHARACTER RECOGNITION INPUT DOCUMENTS |
| 31 | YN | 3 38824 PERFORM RECEPTIONIST DUTIES |
| 32 | YN | 3 38825 OPERATE DUPLICATING EQUIPMENT |
| 33 | YN | 3 38826 TYPE AT 30 WORDS PER MINUTE |
| 34 | YN | 3 38827 TRANSCRIBE OFFICER MESSAGE ORDERS |
| 35 | YN | 3 38830 LEAVE REGULATIONS, PREPARE LEAVE AUTHORIZATIONS |
| 36 | YN | 3 38831 TYPE CORRESPONDENCE AND MESSAGES |
| 37 | YN | 3 38834 ADMINISTRATIVE, OPERATIONAL RECORDS AND REPORTS |
| 38 | YN | 3 38835 INITIATE JOB ORDERS AND WORK REQUESTS |
| 39 | YN | 3 38843 MAINTAIN OFFICER, WARRANT OFFICER SERVICE RECORDS |
| 40 | YN | 3 38852 TYPE INSTRUCTIONS AND NOTICES |
| 41 | YN | 3 38958 EFFECT OFFICER RECEIPTS AND TRANSFERS |
| 42 | YN | 3 46358 USE AND MAINTAIN PUBLICATIONS AND DIRECTIVES |
| 43 | YN | 3 77269 ENSURE SECURITY OF COMMUNICATIONS |
| 44 | YN | 3 77284 CARRY OUT MARKING OF CLASSIFIED MATERIALS |
| 45 | YN | 3 94620 MINOR MECHANICAL MAINTENANCE, OFFICE EQUIPMENT |
| 46 | YN | 2 25269 IDENTIFY FLEET ADMIN., TACTICAL CHAIN OF COMMAND |
| 47 | YN | 2 38619 ORGANIZE AND MONITOR MAINTENANCE OF FILES |
| 48 | YN | 2 38620 HANDLE OBSOLETE FILES AND RECORDS |
| 49 | YN | 2 38627 MAINTAIN A REPORTS CONTROL SYSTEM |
| 50 | YN | 2 38836 SUMMARY AND SPECIAL COURTS-MARTIAL RECORDS |
| 51 | YN | 2 38840 TYPE AT 40 WORDS PER MINUTE |
| 52 | YN | 2 38841 INSTRUCT SUBORDINATES IN OPS DUPLICATING EQUIPMENT |
| 53 | YN | 2 38842 MAINTAIN OFFICER PERSONNEL DIARIES |
| 54 | YN | 2 38844 ODCR, OTHER REPORTS AS REQUIRED BY MAPSMAN |
| 55 | YN | 2 38846 INTERPRET TRAVEL REGULATIONS |
| 56 | YN | 2 38848 NAVY OFFICER CLASSIFICATION SYSTEM CODE STRUCTURE |
| 57 | YN | 2 38849 RECOMMENDATIONS FOR DECORATIONS AND AWARDS |
| 58 | YN | 2 38850 PREPARE TEMADD ORDERS FOR OFFICER PERSONNEL |
| 59 | YN | 2 38851 CARRY OUT OFFICER SEPARATION PROCEDURES |
| 60 | YN | 2 38853 ROUTE CORRESPONDENCE AND CLASSIFIED MATERIAL |
| 61 | YN | 2 38854 HANDLE OFFICIAL AND REGISTERED MAIL |
| 62 | YN | 2 38859 PREPARE FORMS FOR PERSONNEL SECURITY CLEARANCES |
| 63 | YN | 2 38957 MAINTAIN TICKLER AND CROSS-REFERENCE FILES |
| 64 | YN | 2 38959 PREPARE PAY AND PERSONNEL ACTION DOCUMENTS |
| 65 | YN | 2 46360 ORDER PUBLICATIONS AND CHANGES |
| 66 | YN | 2 65015 ADVISE AVAILABLE ACTIVITY LOCATIONS, TYPES OF DUTY |
| 67 | YN | 2 65500 ADVISE PERSONNEL IN RE PERSONAL SERVICES CENTERS |
| 68 | YN | 2 65501 ADVISE PCS MOVE BENEFITS OF NAVY SPONSOR PROGRAM |

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| 69 | YN | 1 | 38629 | APPLY PRINCIPLES OF WORK SIMPLIFICATION |
| 70 | YN | 1 | 38630 | MONITOR THE REPORTS CONTROL SYSTEM |
| 71 | YN | 1 | 38631 | PREPARE MANPOWER AUTHORIZATION CHANGE REQUESTS |
| 72 | YN | 1 | 38634 | REVIEW COMPLETED JOB ORDERS AND WORK REQUESTS |
| 73 | YN | 1 | 38855 | PAPERWORK FOR INFORMAL/FORMAL INVESTIGATIONS |
| 74 | YN | 1 | 38856 | TYPE AT 50 WORDS PER MINUTE |
| 75 | YN | 1 | 38858 | CARRY OUT CASUALTY REPORTING, ASSISTING PROCEDURES |
| 76 | YN | 1 | 38860 | PAPERWORK FOR SUMMARY AND SPECIAL COURTS-MARTIAL |
| 77 | YN | 1 | 38960 | PREPARE CORRESPONDENCE AND MESSAGES |
| 78 | YN | 1 | 38961 | DRAFT INSTRUCTIONS AND NOTICES |
| 79 | YN | 1 | 46361 | SUPERVISE ALL ASPECTS OF PUBLICATION HANDLING |
| 80 | YN | 1 | 65480 | ASSIST THE CASUALTY ASSISTANCE CALLS OFFICER |
| 81 | YN | 1 | 77285 | MONITOR CLASSIFIED MATERIALS SECURITY COMPLIANCE |
| 82 | YN | C | 38639 | APPLY OFFICE MANAGEMENT CONCEPTS AND TECHNIQUES |
| 83 | YN | C | 38780 | MONITOR CORRESPONDENCE AND FORMS TICKLER SYSTEM |
| 84 | YN | C | 38786 | ADMINISTER CLASSIFIED MATERIAL CONTROL SYSTEM |
| 85 | YN | C | 38788 | DOCUMENTS THAT REQUIRE OFFICIAL SIGNATURE |
| 86 | YN | C | 38861 | ORGANIZATION BOOK, BILLS AND PERMANENT DIRECTIVES |
| 87 | YN | C | 38862 | MANAGEMENT OF ADMINISTRATIVE OFFICE |
| 88 | YN | C | 38863 | MONITOR ALL REPORTS AND OUTGOING CORRESPONDENCE |
| 89 | YN | C | 38864 | MONITOR OFFICER FITNESS REPORTS |
| 90 | YN | C | 38865 | INTERPRET AND ANALYZE MANPOWER AUTHORIZATIONS |
| 91 | YN | C | 44462 | ESTABLISH TRAINING IN JUMPS AND MAPHIS PROCEDURES |
| 92 | YN | C | 65490 | ADVISE PAY, ALLOWANCES AND TRAVEL MATTERS |
| 93 | YN | CS | 35476 | MONITOR OPERATIONS IN OWN AREA OF RESPONSIBILITY |
| 94 | YN | CS | 35478 | PREPARE LOCAL DIRECTIVES AND INSTRUCTIONS |
| 95 | YN | CS | 35480 | INSURE MAXIMUM PERSONNEL UTILIZATION |
| 96 | YN | CS | 35513 | SUPERVISE USE OF OFFICE MATERIALS AND EQUIPMENT |
| 97 | YN | CS | 35514 | ADMINISTER RECORDS DISPOSAL PROGRAM |
| 98 | YN | CS | 35516 | MONITOR NAVAL ACTIVITY ADMIN. STAFF FUNCTIONS |
| 99 | YN | CS | 35517 | MONITOR ALL ASPECTS OF RECORDS, FORMS MGMT. PGM. |
| 100 | YN | CS | 35518 | ALL ASPECTS OF OFFICER SERVICE RECORDS MAINTENANCE |
| 101 | YN | CS | 44375 | TRAINING, EFFECTIVENESS, IMPROVEMENT INITIATION |
| 102 | YN | CM | 35483 | CONTROL ADMINISTRATION ACTIVITIES |
| 103 | YN | CM | 35489 | FUTURE PLANNING IN OWN AREA OF RESPONSIBILITY |
| 104 | YN | CM | 35490 | ESTABLISH GOALS IN OWN AREA OF RESPONSIBILITY |
| 105 | YN | CM | 35492 | REVIEW PERSONNEL, EQUIP, MATERIAL REQUIREMENTS |
| 106 | YN | CM | 35519 | PERFORM ORGANIZATIONAL ANALYSES |
| 107 | YN | CM | 52298 | DEVELOP OPERATING BUDGETS, MONITOR EXPENDITURES |
| 108 | BM | 3 | 11511 | LOCATE DAMAGE-CONTROL FITTINGS AND EQUIPMENT |
| 109 | BM | 3 | 16061 | SERVE AS GUN CAPTAIN |
| 110 | BM | 3 | 16063 | ELEMENTARY FIRE CONTROL |
| 111 | BM | 3 | 30051 | OPERATION OF DECK WINCHES |
| 112 | BM | 3 | 34011 | RUNNING RIGGING FOR HANDLING CARGO |
| 113 | BM | 3 | 34012 | ERECT STATION MARKERS FOR REPLENISHMENT AT SEA |
| 114 | BM | 3 | 34013 | SERVE AS SIGNALMAN FOR WINCHMAN OR CRANEMAN |
| 115 | BM | 3 | 34018 | RIGGING AND CARGO-HANDLING EQUIPMENT |
| 116 | BM | 3 | 34024 | MEMBER OF AN ANCHORING AND MOORING DETAIL |
| 117 | BM | 3 | 34031 | CHARACTERISTICS OF NAVIGATIONAL LIGHTS AND AIDS |
| 118 | BM | 3 | 34036 | PREPARE WOOD AND METAL SURFACES FOR PAINTING |
| 119 | BM | 3 | 34037 | PREPARE AND APPLY PAINTS AND PRIMERS |
| 120 | BM | 3 | 34039 | USE STENCILS FOR PAINTING LETTERS, NUMERALS |
| 121 | BM | 3 | 34047 | BASIC KNOT, HITCHES AND SPLICES |
| 122 | BM | 3 | 34049 | TACKLES AND PURCHASES |
| 123 | BM | 3 | 34050 | BREAK-OUT AND FAKE-DOWN HAWSERS AND WIRE ROPE |
| 124 | BM | 3 | 34052 | GROUND TACKLE, RIGGING, HOISTING, STOWING |
| 125 | BM | 3 | 34053 | HANDLING CANVAS AND LEATHER |
| 126 | BM | 3 | 34058 | OPERATE VARIOUS TYPES OF LANDING CRAFT |
| 127 | BM | 3 | 34067 | SERVE AS BOAT COXSWAIN ON LANDING CRAFT |
| 128 | BM | 3 | 34068 | BOAT LOG, COMPASS, AND CHARTS |
| 129 | BM | 3 | 34070 | EQUIPMENT ON SHIP'S POWERBOATS, LCVP'S, LCM'S |
| 130 | BM | 3 | 34071 | BOAT HAILS, RECALLS, SALUTES, AND ETIQUETTE |
| 131 | BM | 3 | 34072 | CONDUCT MINOR INSPECTION, MAINTENANCE OF BOATS |
| 132 | BM | 3 | 34073 | MANEUVERING A SMALL BOAT IN A RESTRICTED SPACE |
| 133 | BM | 3 | 34410 | USE OF NAVIGATIONAL SOUND SIGNALS |
| 134 | BM | 3 | 34411 | INTERPRET RULES FOR AVOIDING COLLISIONS |
| 135 | BM | 3 | 34412 | INTERPRET DISTRESS SIGNALS |
| 136 | BM | 3 | 34413 | GENERAL PRUDENTIAL RULE, GOOD SEAMANSHIP |
| 137 | BM | 3 | 34414 | RULES TO DETERMINE SAFE WORKING LOADS |

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| 138 | BM | 3 | 40001 | OPERATE A SEWING MACHINE FOR SEWING CANVAS |
| 139 | BM | 3 | 40511 | MAINTENANCE OPERATIONS WITH CANVAS |
| 140 | BM | 3 | 42024 | STAND WATCH AS BOATSWAIN'S MATE OF THE WATCH |
| 141 | BM | 3 | 62001 | DIRECT HELICOPTERS USING STD. HAND SIGNALS |
| 142 | BM | 3 | 86049 | INTERPRET SIGNAL FLAGS AND PENNANTS |
| 143 | BM | 3 | 86050 | SEND AND RECEIVE SEMAPHORE AND FLASHING LIGHT |
| 144 | BM | 3 | 94004 | STANDING AND RUNNING BLOCKS AND TACKLES |
| 145 | BM | 3 | 94592 | SHARPEN SCRAPERS AND CHIPPING HAMMERS |
| 146 | BM | 3 | 94593 | MAINTENANCE OF PAINT-SPRAYING EQUIPMENTS |
| 147 | BM | 3 | 94633 | LUBRICATE DECK MACHINERY |
| 148 | BM | 2 | 11513 | DIRECT A DAMAGE-CONTROL REPAIR PARTY SUBGROUP |
| 149 | BM | 2 | 16062 | SERVE AS MOUNT CAPTAIN |
| 150 | BM | 2 | 34014 | SUPERVISE LOADING, DISCHARGING, STOWING OF CARGO |
| 151 | BM | 2 | 34015 | SUPERVISE RIGGING FOR FUELING AT SEA |
| 152 | BM | 2 | 34019 | RIG YARD-AND-STAY AND SWINGING DERRICKS |
| 153 | BM | 2 | 34021 | USE OF GROUND TACKLE FOR MOORING AND ANCHORING |
| 154 | BM | 2 | 34027 | MAINTAIN ANCHORS AND SECURING EQUIPMENT |
| 155 | BM | 2 | 34032 | RECOGNIZE STORM INDICATIONS |
| 156 | BM | 2 | 34033 | USE BAROMETER AND WET- AND DRY-BULB THERMOMETERS |
| 157 | BM | 2 | 34042 | SUPERVISE SHIP'S DECK EQUIPMENT MAINTENANCE |
| 158 | BM | 2 | 34043 | PAINT REMOVAL, SURFACE PREPARATION, PAINTING |
| 159 | BM | 2 | 34044 | SELECT PAINTS UNDER DIRECT SUPERVISION |
| 160 | BM | 2 | 34051 | RIGGING OF ACCOMMODATION LADDER AND BOAT BOOM |
| 161 | BM | 2 | 34054 | RIG FOR TOWING AND BEING TOWED |
| 162 | BM | 2 | 34059 | OPERATE BOW RAMP ON LANDING CRAFT |
| 163 | BM | 2 | 34060 | OPERATE STERN ANCHOR WINCH |
| 164 | BM | 2 | 34061 | HANDLING OF WIRE DURING BEACHING AND RETRACTING |
| 165 | BM | 2 | 34066 | INSPECTION, INFLATABLE LIFEBOATS AND EQUIPMENT |
| 166 | BM | 2 | 34069 | USE OF INFLATABLE LIFEBOAT AND EQUIPMENT |
| 167 | BM | 2 | 34415 | BOAT HANDLING ON A SHIP IN PORT AND UNDERWAY |
| 168 | BM | 2 | 34416 | REEVE A SET OF BOAT FALLS |
| 169 | BM | 2 | 34417 | SUPERVISE SPLICING AND EYE SPLICING |
| 170 | BM | 2 | 35326 | MAINTAIN PAINTING RECORDS AND REPORTS |
| 171 | BM | 2 | 35327 | MAINTAIN HULL RECORDS AND REPORTS |
| 172 | BM | 2 | 35328 | PERSONNEL ASSIGNMENTS FOR PAINTING TASKS |
| 173 | BM | 2 | 42342 | DIRECT, ASSIGN, INSTRUCT MEN IN DECK WATCH SECTION |
| 174 | BM | 2 | 54199 | INVENTORY AND SPARE PART SUPPORT IN COSAL |
| 175 | BM | 2 | 54200 | ORDER REPAIR PARTS USING COSAL |
| 176 | BM | 2 | 54201 | CHANGE THE ALLOWANCE PARTS LIST |
| 177 | BM | 2 | 94005 | SUPERVISE GENERAL UPKEEP OF DECK EQUIPMENT |
| 178 | BM | 1 | 11514 | DIRECT A DAMAGE-CONTROL REPAIR PARTY |
| 179 | BM | 1 | 34016 | SUPERVISE TRANSFER OF PERSONNEL, CARGO AND MAIL |
| 180 | BM | 1 | 34025 | DIRECT PROCEDURES FOR MOORING TO A BUOY |
| 181 | BM | 1 | 34026 | DIRECT PREPARATIONS FOR CARRYING OUT ANCHORS |
| 182 | BM | 1 | 34028 | PREPARE FOR MAKING MEDITERRANEAN MOOR |
| 183 | BM | 1 | 34029 | DETERMINE NAVIGATIONAL POSITION |
| 184 | BM | 1 | 34030 | PLT DANGER BEARING |
| 185 | BM | 1 | 34035 | SMALL BOAT HANDLING, EFFECTS OF GETTING ALONGSIDE |
| 186 | BM | 1 | 34055 | IDENTIFY METHODS OF MINESWEEPING |
| 187 | BM | 1 | 34056 | CONSTANT TENSION EQUIPMENT RIGGING, UNRIGGING |
| 188 | BM | 1 | 34062 | IDENTIFY PROCEDURES AND USE OF PONTOON GEAR |
| 189 | BM | 1 | 34063 | IDENTIFY DUTIES, RESPONSIBILITIES OF BEACHMASTER |
| 190 | BM | 1 | 34418 | ORGANIZE, SUPERVISE PAINTSHOP AND/OR PAINTLOCKER |
| 191 | BM | 1 | 35350 | PLAN, ORGANIZE, ADMINISTER DAILY WORK ASSIGNMENTS |
| 192 | BM | 1 | 35351 | SUPERVISE MAINT OF REQUIRED RECORDS AND LOGS |
| 193 | BM | 1 | 44042 | TRAIN AND SUPERVISE IN BOATSWAIN'S MATE DUTIES |
| 194 | BM | 1 | 54657 | POST CHANGES AND ADDITIONS TO COSAL |
| 195 | BM | C | 11515 | ORGANIZE, SUPERVISE A DAMAGE-CONTROL REPAIR PARTY |
| 196 | BM | C | 16060 | SUPERVISE HANDLING OF AMMUNITION AND FLAMMABLES |
| 197 | BM | C | 34022 | SUPERVISE GROUND TACKLE MAINTENANCE |
| 198 | BM | C | 34023 | SUPERVISE ORDINARY MOOR, MOORING WITH ANCHORS |
| 199 | BM | C | 34057 | FORMULATE METHODS OF ASSISTING A STRANDED VESSEL |
| 200 | BM | C | 34065 | IDENTIFY BOATSWAIN'S MATE DUTIES, LCU, WARPING TUG |
| 201 | BM | C | 34074 | USE MANEUVERING BOARD |
| 202 | BM | C | 34075 | USE TIDE AND CURRENT TABLES |
| 203 | BM | C | 34078 | USE NAVIGATIONAL AIDS TO MANEUVER YARD CRAFT |
| 204 | BM | C | 34079 | USE THE THREE-MINUTE RULE |
| 205 | BM | C | 34081 | DIFFERENTIATE INTERNATIONAL, INLAND RULES OF ROAD |
| 206 | BM | C | 54658 | POST SECAS CHANGES AND SUBMIT REPORT TO VFO |

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| 207 | BM | CS11516 | ASSIST DAMAGE CONTROL OFFICER |
| 208 | BM | CS11517 | IDENTIFY STABILITY FACTORS |
| 209 | BM | CS34076 | COORDINATE ALL TYPES OF CARGO |
| 210 | BM | CS34077 | COORDINATE REPLENISHMENT OF SHIPS AT SEA |
| 211 | BM | CS34080 | COORDINATE ANCHORING, MOORING DURING STORMS |
| 212 | BM | CS35476 | TRACK OPERATIONS IN OWN AREA OF RESPONSIBILITY |
| 213 | BM | CS35478 | PREPARE LOCAL DIRECTIVES AND INSTRUCTIONS |
| 214 | BM | CS35479 | PREPARE CORRESPONDENCE |
| 215 | BM | CS35480 | ASSURE MAXIMUM PERSONNEL UTILIZATION |
| 216 | BM | CS44375 | ORGANIZE AND SCHEDULE TRAINING PROGRAMS |
| 217 | BM | CM34082 | COORDINATE HANDLING OF BOATS AND LANDING CRAFT |
| 218 | BM | CM34083 | COORDINATE SALVAGE AND RESCUE OPERATIONS |
| 219 | BM | CM35483 | PLAN, ORGANIZE, IMPLEMENT AND CONTROL ACTIVITIES |
| 220 | BM | CM35489 | FORECAST FUTURE PLAN AND ACTION REQUIREMENTS |
| 221 | BM | CM35490 | ESTABLISH GOALS, OBJECTIVES AND PRIORITIES |
| 222 | BM | CM35492 | REVIEW PERSONNEL, EQUIP, MATERIAL REQUIREMENTS |
| 223 | BM | CM50045 | DEPT LONG-RANGE PLANNED MAINTENANCE PROGRAM |
| 224 | BM | CM52298 | DEVELOP OPERATING BUDGETS, MONITOR EXPENDITURES |
| 225 | AN | 20350 | AIRCRAFT UNDER EMERGENCY CONDITIONS |
| 226 | AN | 20351 | IDENTIFY MARKINGS INDICATING DANGEROUS AREAS |
| 227 | AN | 20352 | IDENTIFY TOXIC PROPERTIES OF CLEANING MATERIALS |
| 228 | AN | 20368 | RECOGNIZE ARMED EJECTION SEATS |
| 229 | AN | 24425 | HANDLE AIRCRAFT BATTERIES |
| 230 | AN | 25352 | KNOW NAVAL AIR ARM GENERAL ORGANIZATION |
| 231 | AN | 25353 | IDENTIFY NAMES, FUNCTIONS OF NAVAL AIR GROUPS |
| 232 | AN | 25354 | IDENTIFY NAVAL AIRCRAFT EQUADRONS |
| 233 | AN | 25354 | IDENTIFY NAVAL AIRCRAFT SQUADRONS |
| 234 | AN | 40490 | FABRICATE TIEDOWN LINES |
| 235 | AN | 42353 | STAND AIRCRAFT SECURITY WATCH |
| 236 | AN | 46410 | USE PUBLICATIONS IN AIRCRAFT MAINTENANCE |
| 237 | AN | 48330 | HOT BRAKES FIRE EQUIPMENT IDENTIFICATION |
| 238 | AN | 62350 | DEFINE COMMON AVIATION TERMS AND NOMENCLATURE |
| 239 | AN | 62351 | IDENTIFY PURPOSE OF BASIC AIRCRAFT INSTRUMENTS |
| 240 | AN | 62352 | USE AIRFRAME STATION NUMBERING SYSTEM |
| 241 | AN | 62353 | DESIGNATION SYSTEM FOR IDENTIFYING NAVAL AIRCRAFT |
| 242 | AN | 62354 | IDENTIFY BASIC TYPES OF AIRCRAFT POWERPLANTS |
| 243 | AN | 62355 | IDENTIFY AC ELECTRONIC, ARMAMENT EQUIPMENTS |
| 244 | AN | 62357 | AC HYDRAULIC, ELECTRICAL, PNEUMATIC, CABLE SYSTEMS |
| 245 | AN | 62358 | IDENTIFY MAJOR STRUCTURAL COMPONENTS OF AIRCRAFT |
| 246 | AN | 62359 | STAND FIRE WATCH DURING FUELING, STARTING |
| 247 | AN | 62360 | COLOR MARKING SYSTEM FOR AIRFIELD VEHICLES |
| 248 | AN | 62361 | DIRECT AIRCRAFT DURING TAXI |
| 249 | AN | 62362 | SERVE AS A MEMBER OF AN AIRCRAFT HANDLING TEAM |
| 250 | AN | 62363 | SECURE AND TIE DOWN AIRCRAFT |
| 251 | AN | 62364 | STAND COCKPIT BRAKE WATCH, TOWING OR PUSHING |
| 252 | AN | 62365 | OPERATING MOBILE EQUIPMENT AROUND AIRCRAFT |
| 253 | AN | 62366 | CARE OF AIRCRAFT HANDLING EQUIPMENT |
| 254 | AN | 62367 | GENERAL METHODS OF HANDLING LAND, CARRIER AIRCRAFT |
| 255 | AN | 62368 | RECOGNIZE AIRCRAFT CARRIER CLOTHING COLOR CODES |
| 256 | AN | 62369 | IDENTIFY, AVIATION SUPPORT EQUIPMENT |
| 257 | AN | 62370 | HANDLE EXTERNAL POWER CABLES FOR AC START, SERVICE |
| 258 | AN | 62371 | OIL, FUEL, HYDRAULICS, NITROGEN/AIR SERVICING |
| 259 | AN | 62373 | SERVICE AIRCRAFT SERVICING EQUIPMENT |
| 260 | AN | 62376 | COLOR CODES USED, AIRCRAFT LINES, TUBING, HOSES |
| 261 | AN | 79350 | CORROSION AND RUST INSPECTION OF AIRCRAFT |
| 262 | AN | 79356 | CLEAN AND WAX AIRCRAFT |
| 263 | AN | 79357 | PLEXIGLASS/FIBERGLASS/RUBBER/FABRIC CLEAN AGENTS |
| 264 | AN | 94554 | USE AND MAINTAIN COMMON HANDTOOLS |
| 265 | AN | 94555 | USE COMMON MEASURING TOOLS |
| 266 | AN | 94556 | INSTALL COMMON AIRCRAFT SAFETY AND LOCKING DEVICES |
| 267 | AN | 94557 | USE COMMON AIRCRAFT SCREWS, NUTS AND BOLTS |
| 268 | AN | 99350 | HANDLING OF AVIATION-TYPE INFLATABLE LIFE VEST |
| 269 | AN | 99351 | ATTACH AND ADJUST PARACHUTE HARNESS |
| 270 | AN | 99352 | OX- EQUIPMENT, LIFE RAFTS |
| 271 | AN | 99353 | IDENTIFY TYPES OF AIRCRAFT SURVIVAL EQUIPMENT |
| 272 | SM | 3 34009 | REEVE AND SPLICE HALLYARDS |
| 273 | SM | 3 42020 | RENDER PASSING AND SIDE HONORS |
| 274 | SM | 3 42021 | STAND WATCHES AS A SIGNAL OPERATOR |
| 275 | SM | 3 50303 | USE MAINTENANCE REQUIREMENT CARDS (MRC) |

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| 276 | SM | 3 | 50928 | COMPLETE MAINTENANCE DATA FORMS |
| 277 | SM | 3 | 54722 | INVENTORY INSTALLED EQUIPMENT |
| 278 | SM | 3 | 72001 | PERFORM ROUTINE MAINTENANCE ON OPTICAL EQUIPMENT |
| 279 | SM | 3 | 77264 | SAFEKEEPING AND STORAGE OF CLASSIFIED MATERIAL |
| 280 | SM | 3 | 84225 | COMMUNICATIONS SECURITY REGULATIONS, PROCEDURES |
| 281 | SM | 3 | 86015 | RECOGNIZE, USE, INTERPRET EMERGENCY SIGNALS |
| 282 | SM | 3 | 86016 | TRANSMIT, RECEIVE CODE GROUPS BY FLASHING LIGHT |
| 283 | SM | 3 | 86017 | TRANSMIT, RECEIVE PLAIN LANGUAGE BY FLASHING LIGHT |
| 284 | SM | 3 | 86018 | TRANSMIT, RECEIVE PLAIN LANGUAGE BY SEMAPHORE |
| 285 | SM | 3 | 86021 | DISTINGUISH FLAGHOIST SIGNALS |
| 286 | SM | 3 | 86022 | SELECT AND DISPLAY FLAGS AND PENNANTS |
| 287 | SM | 3 | 86023 | EXERCISE RULES OF VISUAL RESPONSIBILITY |
| 288 | SM | 3 | 86024 | DIRECT DAY LIFEBOAT, NIGHT MAN OVERBOARD EXERCISES |
| 289 | SM | 3 | 86025 | IDENTIFY FLAGS AND ENSIGNS OF MARITIME NATIONS |
| 290 | SM | 3 | 86031 | PREPARE A VISUAL MESSAGE FOR TRANSMISSION |
| 291 | SM | 3 | 86035 | HANDLE MESSAGES ACCORDING TO PRECEDENCE |
| 292 | SM | 3 | 86036 | PERFORM CHALLENGE REPLY PROCEDURES |
| 293 | SM | 3 | 86038 | SIGNALMAN DUTIES AS MEMBER OF A BOATCREW |
| 294 | SM | 3 | 86365 | ELECTRICAL AND ELECTRONIC VISUAL SIGNAL EQUIPMENT |
| 295 | SM | 3 | 86366 | OPERATE INFRARED AND FLASHING LIGHT EQUIPMENT |
| 296 | SM | 3 | 94530 | MAINTENANCE OF VISUAL SIGNALING EQUIPMENT |
| 297 | SM | 2 | 34007 | DRESS AND FULL-DRESS A SHIP |
| 298 | SM | 2 | 34008 | RECOGNIZE AND USE RULES GOVERNING FLAG DISPLAY |
| 299 | SM | 2 | 38654 | MAINTAIN VISUAL SIGNAL LOG, VISUAL TRAFFIC FILES |
| 300 | SM | 2 | 40469 | REPAIR SIGNAL AND PERSONAL FLAGS AND PENNANTS |
| 301 | SM | 2 | 42023 | LOCATE A SHIP USING FORMATION DIAGRAM |
| 302 | SM | 2 | 46036 | CORRECT AND MAINTAIN SIGNAL PUBLICATIONS |
| 303 | SM | 2 | 50632 | COMPLETE PMS FEEDBACK REPORTS |
| 304 | SM | 2 | 54200 | ORDER COSAL REPAIR PARTS AND SPECIAL TOOLS |
| 305 | SM | 2 | 86020 | CONSTRUCT AND USE ALL SIGNALING CALL SIGNS |
| 306 | SM | 2 | 86033 | ENCODE, DECODE NAVAL, INTERNATIONAL SIGNALS |
| 307 | SM | 2 | 86044 | CLASSIFIED MATERIAL DISPOSAL AND DESTRUCTION |
| 308 | SM | 2 | 86045 | ENSURE CORRECT CLASSIFIED MATERIAL TRANSPORTATION |
| 309 | SM | 2 | 86367 | TRANSMIT, RECEIVE FLASHING LIGHT CODE GROUPS |
| 310 | SM | 2 | 86368 | TRANSMIT, RECEIVE FLASHING LIGHT PLAIN LANGUAGE |
| 311 | SM | 2 | 86369 | TRANSMIT, RECEIVE SEMAPHORE PLAIN LANGUAGE |
| 312 | SM | 1 | 38657 | SURVEY AND REQUISITION SIGNAL EQUIPMENT |
| 313 | SM | 1 | 38659 | PREPARE SIGNALMEV VISUAL COMM. STANDING ORDERS |
| 314 | SM | 1 | 44367 | PREPARE CRITIQUES OF VISUAL SIGNALING DRILLS |
| 315 | SM | 1 | 44450 | INSTRUCT IN IDENTIFICATION OF SHIPS AND AIRCRAFT |
| 316 | SM | 1 | 44451 | INSTRUCT IN VISUAL COMMUNICATIONS PROCEDURES |
| 317 | SM | 1 | 44452 | INSTRUCT IN RECOGNITION AND AUTHENTICATION |
| 318 | SM | 1 | 50986 | REVIEW COMPLETED MDCS FORMS |
| 319 | SM | 1 | 50987 | PREPARE WEEKLY SCHEDULES OF PREVENTIVE MAINTENANCE |
| 320 | SM | 1 | 54057 | POST CHANGES AND ADDITIONS TO COSAL |
| 321 | SM | 1 | 54725 | MAINTAIN CUSTODY CARDS AND INVENTORY FILES |
| 322 | SM | 1 | 54726 | VERIFY SPARE PART SUPPORT IN COSAL |
| 323 | SM | 1 | 77266 | ADMINISTER SECURITY CLASSIFICATION MANAGEMENT |
| 324 | SM | 1 | 86027 | AUTHENTICATE RELEASER OF VISUAL MESSAGES |
| 325 | SM | 1 | 86028 | DIRECT WARTIME TRANSITION, VISUAL SIGNAL METHODS |
| 326 | SM | 1 | 86029 | CLASSIFY VARIOUS USES OF MESSAGES |
| 327 | SM | 1 | 86034 | USE RESERVE ON BOARD SIGNALING, PUBLICATIONS |
| 328 | SM | 1 | 86370 | TRANSMIT, RECEIVE FLASHING LIGHT CODE GROUPS |
| 329 | SM | 1 | 86371 | TRANSMIT, RECEIVE FLASHING LIGHT PLAIN LANGUAGE |
| 330 | SM | 1 | 86372 | TRANSMIT, RECEIVE SEMAPHORE PLAIN LANGUAGE |
| 331 | SM | C | 50988 | PREPARE QUARTERLY SCHEDULES, PREVENTIVE MAINT |
| 332 | SM | C | 54658 | POST SECAS CHANGES AND SUBMIT REPORT TO VFO |
| 333 | SM | C | 77267 | ADMINISTER COMMAND SECURITY EDUCATION PROGRAM |
| 334 | SM | C | 86039 | PERFORM AS TACTICAL COMMUNICATIONS WATCH OFFICER |
| 335 | SM | C | 86373 | SUPERVISE VISUAL COMMUNICATIONS ACTIVITIES |
| 336 | SM | C | 86374 | SUPERVISE SIGNAL BRIDGE PERSONNEL |
| 337 | SM | CS | 25371 | INTERPRET COMM SECTION ORGANIZATION FUNCTIONS |
| 338 | SM | CS | 35476 | MANAGE IN OWN AREA OF RESPONSIBILITY |
| 339 | SM | CS | 35478 | PREPARE LOCAL DIRECTIVES AND INSTRUCTIONS |
| 340 | SM | CS | 35479 | PREPARE CORRESPONDENCE |
| 341 | SM | CS | 35480 | IMPLEMENT MAXIMUM PERSONNEL UTILIZATION |
| 342 | SM | CS | 35496 | DISSEMINATE SIGNAL EQUIP TECHNICAL INFORMATION |
| 343 | SM | CS | 35497 | OBSERVE, EVALUATE VISUAL COMMUNICATIONS EXERCISES |
| 344 | SM | CS | 35498 | ORGANIZE, IMPLEMENT COMMUNICATIONS SECTION |

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| 345 | SM | CS44041 | ADMINISTER VISUAL COMM EMERGENCY DRILLS |
| 346 | SM | CS44375 | ORGANIZE AND SCHEDULE TRAINING PROGRAMS |
| 347 | SM | CS50989 | ADMINISTER LONG-RANGE PLANNED MAINT PROGRAMS |
| 348 | SM | CS77268 | ADMINISTER COMMAND SECURITY PROGRAM |
| 349 | SM | CS86030 | CLASSIFY BASEGRAMS AND SPECIAL CATEGORIES |
| 350 | SM | CM35483 | PLAN, ORGANIZE, IMPLEMENT, CONTROL ACTIVITIES |
| 351 | SM | CM35489 | FORECAST FUTURE REQUIREMENTS |
| 352 | SM | CM35490 | ESTABLISH GOALS, OBJECTIVES AND PRIORITIES |
| 353 | SM | CM35492 | REVIEW PERSONNEL, EQUIP, MATERIAL REQUIREMENTS |
| 354 | SM | CM52298 | DEVELOP OPERATING BUDGETS, MONITOR EXPENDITURES |
| 355 | EN | 3 11088 | LOCATE PRINCIPAL VALVES, FIRE-MAIN SYSTEM |
| 356 | EN | 3 11089 | OPERATE AND SECURE FIRE AND FLASHING PUMP |
| 357 | EN | 3 11090 | OPERATE INTERNAL-COMBUSTION ENGINE-DRIVEN PUMPS |
| 358 | EN | 3 11091 | USE RADIAC INSTRUMENTS FOR MONITORING |
| 359 | EN | 3 11092 | USE FIREFIGHTING EQUIPMENT |
| 360 | EN | 3 15329 | LOCATE, REPAIR LEAKS IN HYDRAULICS SYSTEMS |
| 361 | EN | 3 15330 | BLEED HYDRAULICS SYSTEMS |
| 362 | EN | 3 15331 | INSTALL SEALS, PACKINGS AND WIPERS IN HYDRAULICS |
| 363 | EN | 3 18463 | USE OF COMMON TEST EQUIPMENTS |
| 364 | EN | 3 24567 | OPERATE ELECTRICAL CHARGING, REGULATING SYSTEMS |
| 365 | EN | 3 28085 | TECHNICAL DRAWING USAGE ABOARD SHIP |
| 366 | EN | 3 30317 | CONDUCT BOILER FEED WATER TESTS |
| 367 | EN | 3 30318 | CORRECT COMMON BOILER MALFUNCTIONS |
| 368 | EN | 3 30321 | OPERATE STEAM OPERATED DISTILLING PLANTS |
| 369 | EN | 3 30323 | REMOVE SCALE FROM EVAPORATOR TUBES MECHANICALLY |
| 370 | EN | 3 30328 | STAND WATCH ON REFRIGERATION, AIR CONDITIONING |
| 371 | EN | 3 30336 | LOW-, MEDIUM-, HIGH-PRESSURE AIR COMPRESSORS |
| 372 | EN | 3 30337 | ADJUST COMPRESSOR FORCED-FEED LUBRICATORS |
| 373 | EN | 3 30345 | OVERHAUL MANUALLY OPERATED VALVES |
| 374 | EN | 3 30349 | OPERATE AND MAINTAIN HYDRAULIC EQUIPMENT |
| 375 | EN | 3 30353 | TEST ELECTRO-HYDRAULIC STEERING SYSTEM |
| 376 | EN | 3 30354 | PERFORM SHIFTING OF STEERING UNIT PUMPS |
| 377 | EN | 3 30355 | STEERING TRANSFER FROM PILOT HOUSE TO AFT STEERING |
| 378 | EN | 3 30357 | TRANSFER TO MANUAL STEERING |
| 379 | EN | 3 30361 | INSPECT, LUBRICATE AND TEST GALLEY EQUIPMENT |
| 380 | EN | 3 30363 | INSPECT, LUBRICATE AND TEST LAUNDRY EQUIPMENT |
| 381 | EN | 3 30364 | INSPECT, LUBRICATE AND TEST DECK MACHINERY |
| 382 | EN | 3 30378 | MAINTAIN MECHANICAL LUBRICATORS |
| 383 | EN | 3 30445 | REPACK, ADJUST STUFFING BOXES ON PUMPS AND SHAFTS |
| 384 | EN | 3 31011 | COMPLETE OPERATIONAL MAINTENANCE OF DIESEL ENGINES |
| 385 | EN | 3 31013 | OPERATE INTERNAL COMBUSTION ENGINES |
| 386 | EN | 3 31014 | JACKING GEAR ON INTERNAL COMBUSTION ENGINES |
| 387 | EN | 3 31015 | CARRYOUT TURNING OVER OF MAIN ENGINES |
| 388 | EN | 3 31016 | ALIGN LUBRICATING OIL SYSTEM |
| 389 | EN | 3 31017 | USE OF STANDBY LUBRICATING OIL PUMPS |
| 390 | EN | 3 31018 | PURGE DIESEL ENGINE FUEL INJECTION SYSTEM |
| 391 | EN | 3 31019 | ENTRIES TO MAIN PROPULSION/DIESEL GENERATOR LOG |
| 392 | EN | 3 31021 | MAINTAIN ENGINEER'S BELL BOOK |
| 393 | EN | 3 31024 | OPERATION OF LUBRICATION SYSTEM, OPERATING ENGINE |
| 394 | EN | 3 31026 | ALIGN STARTING SYSTEM (AIR/HYDRAULIC/ELECTRICAL) |
| 395 | EN | 3 31027 | ALIGN COOLING SYSTEM |
| 396 | EN | 3 31028 | ALIGN FUEL SYSTEM |
| 397 | EN | 3 31029 | CHEMICAL TESTS, LUBE OIL AND DISTILLATE FUELS |
| 398 | EN | 3 31030 | TESTS ON DIESEL ENGINE CLOSED-COOLING WATER SYSTEM |
| 399 | EN | 3 31033 | OIL AND WATER TESTS, LIGHTING OFF AND SECURING |
| 400 | EN | 3 31034 | ALIGN, OPERATE LUBE OIL AND FUEL OIL PURIFIERS |
| 401 | EN | 3 31035 | CHANGE OIL IN DIESEL ENGINES |
| 402 | EN | 3 31048 | MAINTENANCE OF FLANGE SHIELDS ON PIPING SYSTEMS |
| 403 | EN | 3 31057 | LUBRICATING OIL SYSTEM MAINTENANCE |
| 404 | EN | 3 31059 | SELECT AND USE GRINDING COMPOUNDS |
| 405 | EN | 3 31072 | INTERPRET READINGS OF STANDARD ENGINE INSTRUMENTS |
| 406 | EN | 3 31079 | USE OF STANDARD ENGINEER ROOM SUPPLIES |
| 407 | EN | 3 31091 | CHECKS, LUBE ON REDUCTION GEARS, THRUST BEARINGS |
| 408 | EN | 3 31447 | LUBE OIL SAMPLES FROM DIESEL ENGINE FOR ANALYSIS |
| 409 | EN | 3 40529 | MAKE UP RIGID TUBING AND LOW PRESSURE HOSES |
| 410 | EN | 3 46113 | USE AND MAINTAIN TECHNICAL AND MAINT MANUALS |
| 411 | EN | 3 51011 | COMPLETE MAINTENANCE DATA FORMS |
| 412 | EN | 3 51026 | USE MAINTENANCE REQUIREMENT CARDS (MRC) |
| 413 | EN | 3 54800 | IDENTIFY CATEGORIES OF MATERIAL IN COSAL |

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| 414 | EN | 3 | 94155 | USE AND CARE FOR MEASURING INSTRUMENTS |
| 415 | EN | 3 | 98024 | ADJUST FUEL COMBUSTION TO MINIMIZE AIR POLLUTION |
| 416 | EN | 3 | 98025 | DETERMINE POLLUTION THREATS DUE TO PETROLEUM SPILL |
| 417 | EN | 3 | 98026 | PREVENTION OF OIL SPILL ACCIDENTS |
| 418 | EN | 3 | 98335 | SAFETY IN HIGH NOISE AND HEAT STRESS AREAS |
| 419 | EN | 2 | 11093 | INSPECT AND REPAIR PORTABLE PUMPS |
| 420 | EN | 2 | 11447 | IDENTIFY ORGANIZATION OF A REPAIR PARTY |
| 421 | EN | 2 | 30319 | OPERATE AUXILIARY BOILER |
| 422 | EN | 2 | 30324 | REMOVE SCALE FROM DISTILLING UNITS CHEMICALLY |
| 423 | EN | 2 | 30325 | TEST EVAPORATORS AND CONDENSERS FOR LEAKS |
| 424 | EN | 2 | 30326 | CONDUCT STANDARD DISTILLING PLANT TESTS |
| 425 | EN | 2 | 30330 | HALIDE TORCH TESTS ON REFRIGERATION UNITS |
| 426 | EN | 2 | 30331 | OIL CHANGES IN REFRIGERATION COMPRESSORS |
| 427 | EN | 2 | 30332 | SUCTION, DISCHARGE VALVE TESTS, REFRIG COMPRESSORS |
| 428 | EN | 2 | 30333 | TEST AND RECHARGE REFRIGERATION UNITS |
| 429 | EN | 2 | 30334 | TEST, RENEW OIL SEALS IN REFRIGERATION UNITS |
| 430 | EN | 2 | 30338 | SUCTION, DISCHARGE VALVES MAINT ON AIR COMPRESSORS |
| 431 | EN | 2 | 30341 | DETERMINE CLEARANCES IN PUMPS |
| 432 | EN | 2 | 30342 | OVERHAUL PUMPS |
| 433 | EN | 2 | 30343 | CHECK FOR ALIGNMENT OF PUMP DRIVING UNITS |
| 434 | EN | 2 | 30344 | REPLACE ROTARY SEALS |
| 435 | EN | 2 | 30347 | TEST HYDROSTATICALLY, REPAIR PIPING SYSTEMS |
| 436 | EN | 2 | 30358 | LUBRICATE STEERING GEAR |
| 437 | EN | 2 | 30372 | ADJUST, REPAIR REFRIGERATION AUTOMATIC CONTROLS |
| 438 | EN | 2 | 30374 | CORRECT INEFFICIENT REFRIGERATION SYSTEMS OPS |
| 439 | EN | 2 | 30911 | CLEAN, INSPECT, TEST HEAT EXCHANGERS |
| 440 | EN | 2 | 30912 | MAINT OF EXHAUST SILENCERS AND SPARK ARRESTERS |
| 441 | EN | 2 | 30913 | OPERATE A HEAT RECOVERY DISTILLING PLANT |
| 442 | EN | 2 | 31038 | INTERNAL COMBUSTION ENGINE MAINTENANCE |
| 443 | EN | 2 | 31039 | REFACE, RESEAT INTAKE AND EXHAUST VALVES |
| 444 | EN | 2 | 31043 | TEST UNIT INJECTORS AND/OR FUEL INJECTION NOZZLES |
| 445 | EN | 2 | 31044 | MAINTENANCE OF FUEL OIL INJECTORS |
| 446 | EN | 2 | 31049 | PREVENTION OF CRANKCASE EXPLOSIONS |
| 447 | EN | 2 | 31051 | TROUBLESHOOT GASOLINE ENGINES |
| 448 | EN | 2 | 31061 | CHEMICAL ANALYSIS OF FUELS AND OILS |
| 449 | EN | 2 | 31092 | ENGINE AND DRIVE SHAFT ADJUSTMENTS, SMALL CRAFT |
| 450 | EN | 2 | 31093 | CHECK OIL CLEARANCE IN BEARINGS |
| 451 | EN | 2 | 31448 | MAINT INTERNAL COMBUSTION ENGINE TURBO-CHARGERS |
| 452 | EN | 2 | 31449 | TROUBLESHOOT INTERNAL COMBUSTION ENGINE BLOWERS |
| 453 | EN | 2 | 31450 | OPERATE AND MAINTAIN VERTICAL CONVEYORS |
| 454 | EN | 2 | 31451 | MAINT OF LUBE OIL AND FUEL OIL PURIFIERS |
| 455 | EN | 2 | 31452 | EXTERNAL ADJUSTMENTS ON DIESEL ENGINES |
| 456 | EN | 2 | 31453 | MAINT TREND ANALYSIS DATA ON DIESEL ENGINE OPS |
| 457 | EN | 2 | 35112 | RECORD RESULTS OF EQUIPMENT TESTS |
| 458 | EN | 2 | 35342 | RECORD TRAINING DATA |
| 459 | EN | 2 | 48245 | TROUBLESHOOT AUXILIARY SYSTEMS |
| 460 | EN | 2 | 48256 | DYE-PENETRANT AND MAGNAFLUX TESTS, METAL SURFACES |
| 461 | EN | 2 | 51114 | COMPLETE PMS FEEDBACK REPORTS |
| 462 | EN | 2 | 54801 | INSTALLED EQUIP AND SPARE PART SUPPORT IN COSAL |
| 463 | EN | 2 | 54802 | ORDER REPAIR PARTS AND SPECIAL TOOLS USING COSAL |
| 464 | EN | 2 | 94156 | USE MECHANICAL MAINTENANCE TEST EQUIPMENT |
| 465 | EN | 2 | 94157 | PLAIN TURNING AND CUTTING ON AN ENGINE LATHE |
| 466 | EN | 1 | 11454 | SUPERVISE A DAMAGE CONTROL PARTY |
| 467 | EN | 1 | 30320 | MAINTENANCE AND TESTS ON AUXILIARY BOILERS |
| 468 | EN | 1 | 30327 | PLUG AND/OR REPLACE HEAT EXCHANGER TUBES |
| 469 | EN | 1 | 30339 | INTERCOOLER, AFTERCOOLER, OIL COOLER MAINTENANCE |
| 470 | EN | 1 | 30340 | OVERHAUL OF AIR COMPRESSORS |
| 471 | EN | 1 | 30348 | REDUCING, RELIEF, TEMPERATURE CONTROL VALVE MAINT |
| 472 | EN | 1 | 30350 | HYDRAULIC SYSTEM MAINTENANCE |
| 473 | EN | 1 | 30914 | STEAM OPERATED DISTILLING PLANT MAINTENANCE |
| 474 | EN | 1 | 30915 | VAPOR COMPRESSION DISTILLING PLANT MAINTENANCE |
| 475 | EN | 1 | 31012 | INTERNAL COMBUSTION ENGINE MAINTENANCE |
| 476 | EN | 1 | 31025 | ADJUSTMENT OF TEMPERATURE REGULATING VALVES |
| 477 | EN | 1 | 31031 | GRAPHICALLY DETERMINE PROPER ENGINE OPERATION |
| 478 | EN | 1 | 31037 | REPAIR OF INTERNAL COMBUSTION ENGINES |
| 479 | EN | 1 | 31040 | CHECK MAIN ENGINE BEARING AND THRUST CLEARANCES |
| 480 | EN | 1 | 31041 | BLOWER CLEARANCES, LOBES, TIMING, DRIVE GEAR CHECK |
| 481 | EN | 1 | 31042 | INSPECT, TAKE CLEARANCES ON TURBO-CHARGERS |
| 482 | EN | 1 | 31094 | CHECK THRUST BEARING READINGS |

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| 483 | EN | 1 | 31097 | CHECK DAMAGE TO SHAFTS AND THRUST BEARINGS |
| 484 | EN | 1 | 31253 | INSPECT, ADJUST GOVERNORS AND OVERSPEED TRIPS |
| 485 | EN | 1 | 31454 | COMPLETE MAINT OF GOVERNORS AND OVERSPEED TRIPS |
| 486 | EN | 1 | 35323 | MAINTAIN ENGINE ROOM RECORDS |
| 487 | EN | 1 | 51167 | REVIEW COMPLETED MDCS FORMS |
| 488 | EN | 1 | 51168 | PREPARE WEEKLY SCHEDULES OF PREVENTIVE MAINTENANCE |
| 489 | EN | 1 | 54827 | POST CHANGES AND ADDITIONS TO COSAL |
| 490 | EN | C | 30359 | MECHANICAL OPERATION TESTS |
| 491 | EN | C | 30674 | SUPERVISE AND TRAIN IN MECHANICAL MAINTENANCE |
| 492 | EN | C | 31045 | DIESEL AND GASOLINE ENGINES MAINTENANCE |
| 493 | EN | C | 31046 | CONDUCT DIESEL ENGINE POST-OVERHAUL CHECKOUT |
| 494 | EN | C | 31047 | MEASURE CRANKSHAFT DEFLECTION |
| 495 | EN | C | 31077 | SHIP'S EXTERNAL DRIVE CHECKS WHEN IN DRYDOCK |
| 496 | EN | C | 31095 | MAIN REDUCTION GEAR BACKLASH, ALIGNMENT CHECKS |
| 497 | EN | C | 35432 | PREPARE POST REPAIR TRIALS REPORTS |
| 498 | EN | C | 35433 | REVIEW ALL ENGINE ROOM RECORDS |
| 499 | EN | C | 35885 | SUPERVISE ALL ADMINISTRATION FOR ENGINEERING DEPT |
| 500 | EN | C | 35886 | INSPECT RESULTS OF EQUIPMENT TESTS |
| 501 | EN | C | 42278 | INTERPRET DUTIES, ENGINEERING OFFICER OF THE WATCH |
| 502 | EN | C | 42279 | SUPERVISE ENGINE ROOM WATCH ON DIESEL-DRIVEN SHIP |
| 503 | EN | C | 42367 | INTERPRET DUTIES, ENGINEERING OFFICER OF THE WATCH |
| 504 | EN | C | 51069 | ESTIMATE REPAIRS FOR AUX, MAIN PROPULSION MACH |
| 505 | EN | C | 51169 | PREPARE QUARTERLY PM SCHEDULES |
| 506 | EN | C | 51475 | INSPECT "SHIP TO SHOP" WORK AND REPORTS |
| 507 | EN | C | 51476 | ANALYZE CHEMICAL OIL ANALYSIS REPORTS |
| 508 | EN | C | 51477 | INTERPRET DIESEL ENGINE TREND ANALYSIS DATA |
| 509 | EN | C | 51478 | INTERPRET DIESEL OIL CHEMICAL TESTS |
| 510 | EN | C | 54804 | ENTER CHANGES TO SECAS, SUBMIT REPORTS TO VFO |
| 511 | EN | C | 98021 | SUPERVISE OIL SPILL CONTAINMENT EXERCISES |
| 512 | EN | C | 31410 | TRAINING OF PERSONNEL IN MECHANICAL MAINTENANCE |
| 513 | EN | C | 31455 | ANALYSIS OF DAILY OPERATING RECORDS |
| 514 | EN | C | 31456 | ESTIMATE FEASIBILITY OF REPAIRS |
| 515 | EN | C | 35072 | MONITOR MAINT OF EQUIPMENT, MATERIAL LOGS |
| 516 | EN | C | 35362 | ADVISE PERSONNEL IN REPAIR PAPERWORK |
| 517 | EN | C | 35476 | MANAGEMENT IN OWN AREA OF RESPONSIBILITY |
| 518 | EN | C | 35478 | PREPARE LOCAL DIRECTIVES AND INSTRUCTIONS |
| 519 | EN | C | 35479 | PREPARE CORRESPONDENCE |
| 520 | EN | C | 35480 | ESTABLISH MAXIMUM PERSONNEL UTILIZATION |
| 521 | EN | C | 35884 | REVIEW WATCHSTANDING QUALIFICATIONS |
| 522 | EN | C | 35887 | REVIEW PUBLICATIONS REQUIREMENTS |
| 523 | EN | C | 44375 | ORGANIZE AND SCHEDULE TRAINING PROGRAMS |
| 524 | EN | C | 51073 | ORGANIZE AND SCHEDULE WORK |
| 525 | EN | C | 51206 | ADMINISTER LONG-RANGE PLANNED MAINTENANCE PROGRAM |
| 526 | EN | C | 98280 | MONITOR ENVIRONMENTAL POLLUTION CONTROL PROGRAMS |
| 527 | EN | C | 98281 | MONITOR ENVIRONMENTAL PROGRAMS |
| 528 | EN | C | 20060 | DEVELOP AND MONITOR SAFETY PROGRAMS |
| 529 | EN | C | 31457 | MONITOR DAILY OPERATING RECORDS |
| 530 | EN | C | 35365 | PREPARE MONTHLY SUMMARY, DIESEL-DRIVEN SHIPS |
| 531 | EN | C | 35366 | IC AND GAS TURBINE ENGINE PUBLICATION DISTRIBUTION |
| 532 | EN | C | 35483 | PLAN, ORGANIZE, IMPLEMENT, CONTROL ACTIVITIES |
| 533 | EN | C | 35489 | FORECAST FUTURE REQUIREMENTS |
| 534 | EN | C | 35490 | ESTABLISH GOALS, OBJECTIVES AND PRIORITIES |
| 535 | EN | C | 35492 | REVIEW PERSONNEL, EQUIPMENT, MATERIAL REQUIREMENTS |
| 536 | EN | C | 46616 | REVIEW MANUAL, PRINT, PUBLICATION REQUIREMENTS |
| 537 | EN | C | 51072 | MONITOR ALL "SHIP TO SHOP" WORK AND REPORTS |
| 538 | EN | C | 51075 | PERFORM CASUALTY ANALYSIS |
| 539 | EN | C | 51179 | COORDINATE REPAIRS BETWEEN SHIP AND SHIPYARD |
| 540 | EN | C | 52298 | DEVELOP OPERATING BUDGETS, MONITOR EXPENDITURES |
| 541 | EN | C | 54806 | MONITOR ASSIGNED EQUIPMENT LOGISTICS SUPPORT |
| 542 | GMG | 3 | 14086 | TEST ELECTRONIC TUBES |
| 543 | GMG | 3 | 14564 | INTERPRET COLOR-CODING OF ELECTRONIC PARTS |
| 544 | GMG | 3 | 14565 | TEST AND REPLACE ELECTRONIC PARTS |
| 545 | GMG | 3 | 14570 | IDENTIFY ELECTRONIC CIRCUIT PROTECTIVE DEVICES |
| 546 | GMG | 3 | 15305 | INSPECT AND SERVICE HYDRAULIC EQUIPMENT |
| 547 | GMG | 3 | 15307 | TEST HYDRAULIC ORDNANCE EQUIPMENT |
| 548 | GMG | 3 | 15314 | RECOGNIZE TYPES AND PRINCIPLES, PRESSURE GAUGES |
| 549 | GMG | 3 | 15315 | MAINTAIN PIPES, FITTINGS, SEALS AND GASKETS |
| 550 | GMG | 3 | 16027 | IDENTIFY TYPES OF EXPLOSIVE ORDNANCE |
| 551 | GMG | 3 | 16033 | HANDLE, STOW ORDNANCE AND PYROTECHNICS |

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|-----|-----|---|-------|--|
| 552 | GMG | 3 | 16034 | STOW, ISSUE, INVENTORY SMALL ARMS AND AMMUNITION |
| 553 | GMG | 3 | 16304 | OPERATE AMMUNITION HOIST UNITS |
| 554 | GMG | 3 | 16334 | SERVICE ORDNANCE HANDLING AND ASSOCIATED EQUIPMENT |
| 555 | GMG | 3 | 16398 | INSTALL, SET, REMOVE PROJECTILE FUZING DEVICES |
| 556 | GMG | 3 | 16399 | ASSEMBLE AND USE LANDING PARTY EQUIPMENT |
| 557 | GMG | 3 | 16400 | OPERATE AND MAINTAIN LINE-THROWING GUNS |
| 558 | GMG | 3 | 16402 | PERFORM FUZING OF HAND GRENADES |
| 559 | GMG | 3 | 16403 | MONITOR, REPLACE RELATIVE HUMIDITY INDICATORS |
| 560 | GMG | 3 | 16404 | LOG MAGAZINE TEMPERATURES, INSPECT MAGAZINE AREA |
| 561 | GMG | 3 | 16405 | OPERATE MAGAZINE FIREFIGHTING SYSTEMS |
| 562 | GMG | 3 | 16407 | INSPECT ORDNANCE ITEMS |
| 563 | GMG | 3 | 16408 | OPERATE PYROTECHNIC EQUIPMENT |
| 564 | GMG | 3 | 17079 | MAINTAIN SMALL ARMS |
| 565 | GMG | 3 | 17081 | MAINTAIN LANDING PARTY EQUIPMENT |
| 566 | GMG | 3 | 17365 | PERFORM DAILY TRANSMISSION TESTS |
| 567 | GMG | 3 | 18017 | OPERATE MECHANICAL AND ELECTRICAL TEST EQUIPMENT |
| 568 | GMG | 3 | 18022 | OPERATE PRESSURE GAUGES, INTERPRET READINGS |
| 569 | GMG | 3 | 24023 | MAKE ELECTRICAL CABLE AND WIRING CHECKS |
| 570 | GMG | 3 | 24025 | COMMUTATOR, SLIPPING, BRUSH ASSEMBLY MAINTENANCE |
| 571 | GMG | 3 | 24390 | ELECTRICAL/ELECTRONIC TERMS/UNITS OF MEASURE |
| 572 | GMG | 3 | 24391 | IDENTIFY TYPES OF A.C. MOTORS |
| 573 | GMG | 3 | 24497 | IDENTIFY TYPES OF D.C. MOTORS AND GENERATORS |
| 574 | GMG | 3 | 24500 | CLEAN ELECTRICAL CONTACTS AND SWITCHES |
| 575 | GMG | 3 | 24501 | MECHANICAL WIRE CONNECTING, INCLUDING SOLDERING |
| 576 | GMG | 3 | 24502 | DETECT AND REPLACE BLOWN FUSES |
| 577 | GMG | 3 | 24503 | POINT-TO-POINT VOLTAGE, RESISTANCE MEASUREMENTS |
| 578 | GMG | 3 | 28016 | IDENTIFY MECHANICAL, HYDRAULIC, ELECTRONIC SYMBOLS |
| 579 | GMG | 3 | 28019 | USE AND READ DIAGRAMS AND DRAWINGS |
| 580 | GMG | 3 | 28020 | TRACE CIRCUITS ON SCHEMATICS AND DRAWINGS |
| 581 | GMG | 3 | 29236 | MAINTAIN ONBOARD SYSTEMS BREECH MECHANISMS |
| 582 | GMG | 3 | 29238 | REPAIR SEALING SURFACES, MATING AREAS, THREADS |
| 583 | GMG | 3 | 29239 | REPLACE FAULTY FASTENING HARDWARE AND SEALS |
| 584 | GMG | 3 | 29549 | INSTALL ALIGNMENT EQUIPMENT ON GUN MOUNTS |
| 585 | GMG | 3 | 40525 | CUT, BEND, PREPARE PIPING AND TUBING |
| 586 | GMG | 3 | 46030 | USE PUBS RELATED TO OPS/TEST/REPAIR, ORDNANCE EQPT |
| 587 | GMG | 3 | 48241 | HANDLING AND DISPOSAL OF MISFIRED ROUNDS |
| 588 | GMG | 3 | 51011 | COMPLETE MAINTENANCE DATA FORMS |
| 589 | GMG | 3 | 51026 | USE MAINTENANCE REQUIREMENT CARDS |
| 590 | GMG | 3 | 54192 | PROCESS AND DOCUMENT REPAIRABLE ITEMS |
| 591 | GMG | 3 | 54759 | MAINTAIN CONSUMABLE SUPPLIES, OBTAIN REPLACEMENTS |
| 592 | GMG | 3 | 54760 | IDENTIFY MATERIALS CONTAINED IN COSAL |
| 593 | GMG | 3 | 54761 | INVENTORY TOOLS AND PORTABLE TESTING EQUIPMENT |
| 594 | GMG | 3 | 79272 | CORROSION PREVENTION, MOISTURE PROTECTIVE MATERIAL |
| 595 | GMG | 3 | 92336 | USE, MAINTAIN FIXED/PORTABLE PNEU/ELEC POWER TOOLS |
| 596 | GMG | 3 | 94424 | USE, MAINTAIN HANDTOOLS |
| 597 | GMG | 3 | 94508 | OPERATE TORQUING TOOLS |
| 598 | GMG | 2 | 14043 | SERVOAMPLIFIERS MAINTENANCE |
| 599 | GMG | 2 | 14566 | ANALYZE ELECTRONIC SYSTEMS MALFUNCTIONS |
| 600 | GMG | 2 | 14567 | FIRE CONTROL INTERFACE DSOT |
| 601 | GMG | 2 | 14798 | CHECK ALARMS, SENSING DEVICES FOR OPERATION |
| 602 | GMG | 2 | 15023 | PERFORM HYDRAULIC TESTS, ORDNANCE EQUIPMENT |
| 603 | GMG | 2 | 15309 | INSTALL, MAINTAIN COMPONENTS IN HYDRAULIC SYSTEMS |
| 604 | GMG | 2 | 15311 | ANALYZE PUMP MALFUNCTIONS AND MAKE REPAIRS |
| 605 | GMG | 2 | 15312 | RECOIL, COUNTER RECOIL, GAS EJECTOR SYSTEMS |
| 606 | GMG | 2 | 16004 | USE DEMOLITION CHARGES FOR EMERGENCY DESTRUCTION |
| 607 | GMG | 2 | 16021 | INSPECT EXPLOSIVE ORDNANCE ITEMS FOR DAMAGE |
| 608 | GMG | 2 | 16022 | INSTRUCT CREWS IN HANDLING AMMUNITION, EXPLOSIVES |
| 609 | GMG | 2 | 16054 | HANDLE DAMAGED EXPLOSIVE COMPONENTS |
| 610 | GMG | 2 | 16099 | CHECK ALARMS AND SENSING DEVICES |
| 611 | GMG | 2 | 17366 | WEAPONS ADJUSTMENT AND ALIGNMENT |
| 612 | GMG | 2 | 17367 | REPLACE DEFECTIVE COMPONENTS OR MODULES |
| 613 | GMG | 2 | 18419 | INSTALL, OPERATE GUN MOUNT DYNAMIC TEST EQUIPMENT |
| 614 | GMG | 2 | 24026 | TEST, REPLACE ELECTRICAL CIRCUIT COMPONENTS |
| 615 | GMG | 2 | 24027 | REMOVE, INSTALL, ALIGN, ZERO SYNCHROS |
| 616 | GMG | 2 | 24393 | ANALYZE ORDNANCE ELECTRICAL SYSTEMS MALFUNCTIONS |
| 617 | GMG | 2 | 28017 | PREPARE BASIC DRAWINGS AND MATHEMATICAL LAYOUTS |
| 618 | GMG | 2 | 28025 | USE WORKING DRAWINGS IN MAKING REPAIRS, MODS |
| 619 | GMG | 2 | 28382 | USE MICROFICHE, LD DRAWINGS, READ/PRINT MACHINES |
| 620 | GMG | 2 | 29237 | CHECK ACCURACY OF TRAIN AND ELEVATION INDICATORS |

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|-----|-----|----|-------|--|
| 621 | GMG | 2 | 29243 | TEST AND MAINTAIN ORDNANCE WATER SYSTEM |
| 622 | GMG | 2 | 29245 | PREPARE ONBOARD GUNS AND EQUIPMENT FOR FIRING |
| 623 | GMG | 2 | 29246 | PERFORM POST FIRING PROCEDURES ON GUNS, EQUIPMENT |
| 624 | GMG | 2 | 29248 | TEST FIRING CUTOFF ASSEMBLIES, INTERPRET MEANINGS |
| 625 | GMG | 2 | 29249 | TEST FUZE-SETTING DEVICES, INTERPRET MEANINGS |
| 626 | GMG | 2 | 29250 | INSPECT, TEST ASSEMBLIES (LESS POWER DRIVES) |
| 627 | GMG | 2 | 29251 | MAINTAIN, REPAIR ASSEMBLIES (LESS POWER DRIVES) |
| 628 | GMG | 2 | 29252 | MAINTAIN, CHECK ORDNANCE OPERATION LOGS |
| 629 | GMG | 2 | 36450 | MAINTAIN SHOP AND EQUIPMENT WORKLOGS |
| 630 | GMG | 2 | 36451 | MAINTAIN EQUIPMENT HISTORIES |
| 631 | GMG | 2 | 51114 | COMPLETE PMS FEEDBACK REPORTS |
| 632 | GMG | 2 | 54708 | SUBMIT DAILY AMMUNITION TRANSACTION REPORTS |
| 633 | GMG | 2 | 54813 | CORRECT THE COSAL REPORTS |
| 634 | GMG | 2 | 54814 | INVENTORY EQUIPMENT, SPARE PART SUPPORT IN COSAL |
| 635 | GMG | 2 | 54815 | ORDER PARTS AND TOOLS USING COSAL |
| 636 | GMG | 1 | 14062 | DIAGNOSE ELECTRONIC MALFUNCTIONS |
| 637 | GMG | 1 | 15313 | TEST, ADJUST, REPAIR HYDRAULIC MECHANISMS |
| 638 | GMG | 1 | 16023 | SUPERVISE CREWS IN ORDNANCE HANDLING |
| 639 | GMG | 1 | 18018 | ANALYZE, INTERPRET DATA, GUN MOUNT DYNAMIC TEST |
| 640 | GMG | 1 | 18021 | OPERATE AN OSCILLOSCOPE |
| 641 | GMG | 1 | 28018 | PREPARE ADVANCED DRAWINGS AND MATHEMATICAL LAYOUTS |
| 642 | GMG | 1 | 29253 | INSPECT AND TEST POWER DRIVES |
| 643 | GMG | 1 | 29254 | MAINTAIN AND REPAIR POWER DRIVES |
| 644 | GMG | 1 | 29255 | REPAIR AND ADJUST FIRING CUTOFF ASSEMBLIES |
| 645 | GMG | 1 | 29256 | REPAIR AND ADJUST FUZE-SETTING DEVICES |
| 646 | GMG | 1 | 29551 | TEST, ADJUST, REPAIR ALARMS AND SENSING DEVICES |
| 647 | GMG | 1 | 29552 | OVERHAUL AND REPAIR GUN MOUNTS |
| 648 | GMG | 1 | 38344 | COMPLETE WEAPONS SYSTEM DEFICIENCY REPORTS |
| 649 | GMG | 1 | 38345 | PREPARE PERIODIC PERFORMANCE REPORTS |
| 650 | GMG | 1 | 38346 | MAINTAIN AMMUNITION RECORDS, INVENTORIES |
| 651 | GMG | 1 | 38887 | MAINTAIN RECORDS, CONVENTIONAL EXPLOSIVE ORDNANCE |
| 652 | GMG | 1 | 38888 | ORGANIZE, SUPERVISE MAINTENANCE OF A TECHNICAL LIBRARY |
| 653 | GMG | 1 | 51167 | REVIEW COMPLETED MOCS FORMS |
| 654 | GMG | 1 | 51168 | PREPARE WEEKLY SCHEDULES OF PREVENTIVE MAINTENANCE |
| 655 | GMG | 1 | 54816 | EFFECT CHANGES TO SECAS SYSTEM |
| 656 | GMG | 1 | 54843 | INITIATE SURVEYS AND DAMAGED SHIPMENT REPORTS |
| 657 | GMG | 1 | 54844 | SUPERVISE INVENTORIES AND MAINTAIN CUSTODY RECORDS |
| 658 | GMG | 1 | 98255 | PREPARE ENVIRONMENTAL POLLUTION CONTROL REPORTS |
| 659 | GMG | C | 14042 | REPAIRS TO INDICATOR AND RECEIVER REGULATORS |
| 660 | GMG | C | 14044 | SUPERVISE MAINT OF ORDNANCE ELECTRIC/ELECTRONIC SYS |
| 661 | GMG | C | 14045 | INSPECT REPAIRS, ELECTRIC/ELECTRONIC EQUIP |
| 662 | GMG | C | 14064 | ANALYZE ELECTRIC/ELECTRONIC DISCREPANCY TRENDS |
| 663 | GMG | C | 16032 | SUPERVISE ASHORE STOWAGE OF EXPLOSIVE ORDNANCE |
| 664 | GMG | C | 16411 | SUPERVISE AND INSPECT ORDNANCE STOWAGE |
| 665 | GMG | C | 17426 | DIAGNOSE EFFECTS OF ENVIRONMENTAL CONDITIONS |
| 666 | GMG | C | 17427 | INSPECT COMPLETED MODERNIZATIONS |
| 667 | GMG | C | 20276 | SUPERVISE SAFETY PROCEDURES FOR INSPECTIONS |
| 668 | GMG | C | 38892 | PREPARE WEAPONS DEPARTMENT REPORTS |
| 669 | GMG | C | 38893 | IMPLEMENT LOADING AND STOWAGE PLANS |
| 670 | GMG | C | 38897 | INTERPRET REQUIREMENTS FOR NAVY INSPECTIONS |
| 671 | GMG | C | 51079 | SUPERVISE WORK AND ESTABLISH WORK PRIORITIES |
| 672 | GMG | C | 51169 | PREPARE PREVENTIVE MAINTENANCE QUARTERLY SCHEDULES |
| 673 | GMG | C | 54766 | PERFORM ARMAMENT INVENTORIES |
| 674 | GMG | C | 98336 | SUPERVISE SHIPBOARD ENVIRONMENTAL POLLUTION CONT |
| 675 | GM | CS | 17417 | SUPERVISE ALIGNMENT OF GUN, MISSILE BATTERIES |
| 676 | GM | CS | 35341 | PREPARE, SUBMIT ALL ADMINISTRATIVE REPORTS |
| 677 | GM | CS | 35476 | REPORT OPERATIONS IN OWN AREA OF RESPONSIBILITY |
| 678 | GM | CS | 35478 | PREPARE LOCAL DIRECTIVES AND INSTRUCTIONS |
| 679 | GM | CS | 35479 | PREPARE CORRESPONDENCE |
| 680 | GM | CS | 35480 | ESTABLISH MAXIMUM PERSONNEL UTILIZATION |
| 681 | GM | CS | 44375 | ORGANIZE AND SCHEDULE TRAINING PROGRAMS |
| 682 | GM | CS | 51153 | ESTIMATE TIME, MATERIAL, LABOR REQUIREMENTS |
| 683 | GM | CS | 51154 | SUPERVISE INSPECTION PROCEDURES |
| 684 | GM | CS | 51155 | REVIEW, EVALUATE TEST/CHECKOUT PROCEDURES |
| 685 | GM | CS | 51206 | ADMINISTER A LONG-RANGE PM PROGRAM |
| 686 | GM | CS | 54196 | CONTROL ORDNANCE PROCUREMENT EXPENDITURES |
| 687 | GM | CM | 20291 | COORDINATE, MANAGE DEPARTMENT ORDNANCE SAFETY |
| 688 | GM | CM | 35483 | PLAN, ORGANIZE, IMPLEMENT, CONTROL ACTIVITIES |
| 689 | GM | CM | 35489 | FORECAST FUTURE REQUIREMENTS |

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|-----|----|---------|---|
| 690 | GM | CM35490 | ESTABLISH GOALS, OBJECTIVES AND PRIORITIES |
| 691 | GM | CM35492 | REVIEW PERSONNEL, EQUIPMENT, MATERIAL REQHNTS |
| 692 | GM | CM35551 | SUPERVISE OPERATIONS AND PROCEDURES |
| 693 | GM | CM35552 | PREPARE MAINT PERIODIC AND RECURRING REPORTS |
| 694 | GM | CM35553 | DEVELOP ACCOUNTING PROCEDURES FOR ALL WORK |
| 695 | GM | CM51156 | COORDINATE SURFACE WEAPONS SYSTEMS OVERHAUL |
| 696 | GM | CM51157 | ANALYZE DISCREPANCY TRENDS IN EQUIPMENT RECORDS |
| 697 | GM | CM52298 | DEVELOP OPERATING BUDGETS, MONITOR EXPENDITURES |

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| 2 | SM | 3 34009 | 41 59 | |
| 3 | SM | 3 42020 | 41 42 62 | |
| 4 | SM | 3 42021 | 41 58 | |
| 5 | SM | 3 50303 | 01 | |
| 6 | SM | 3 50928 | 01 | |
| 7 | SM | 3 54722 | 01 | |
| 8 | SM | 3 72001 | 41 52 59 61 | |
| 9 | SM | 3 77264 | 02 | |
| 10 | SM | 3 84225 | 53 55 60 61 | |
| 11 | SM | 3 86015 | 53 55 60 61 | |
| 12 | SM | 3 86016 | 55 60 61 | |
| 13 | SM | 3 86017 | 55 60 61 | |
| 14 | SM | 3 86018 | 55 60 61 | |
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| 17 | SM | 3 86023 | 41 54 | |
| 18 | SM | 3 86024 | 42 60 62 91 | |
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| 20 | SM | 3 86031 | 41 60 82 | |
| 21 | SM | 3 86035 | 41 60 | |
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| 23 | SM | 3 86038 | 43 60 | |
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| 25 | SM | 3 86366 | 41 42 57 61 | |
| 26 | SM | 3 94530 | 41 59 61 | |
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| 28 | YN | 3 38606 | 01 | |
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| 34 | YN | 3 38827 | 03 | |
| 35 | YN | 3 38830 | 01 12 | |
| 36 | YN | 3 38831 | 21 | |
| 37 | YN | 3 38834 | 11 | |
| 38 | YN | 3 38835 | 01 | |
| 39 | YN | 3 38843 | 02 | |
| 40 | YN | 3 38852 | 11 21 | |
| 41 | YN | 3 38958 | 01 | |
| 42 | YN | 3 46358 | 02 12 | |
| 43 | YN | 3 77269 | 41 42 61 | |
| 44 | YN | 3 77284 | 03 | |
| 45 | YN | 3 94620 | 21 23 41 59 | |
| 46 | YN | 2 25269 | 53 55 | |
| 47 | YN | 2 38619 | 02 | |
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| 49 | YN | 2 38627 | 02 04 | |
| 50 | YN | 2 38836 | 01 04 11 21 | |
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| 65 | YN | 2 46360 | 01 | |
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| 67 | YN | 2 65500 | 12 35 | |
| 68 | YN | 2 65501 | 12 35 | |

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| 69 | YN | 1 | 38629 | 41 | 42 | 58 | 62 | 82 |
| 70 | YN | 1 | 38630 | 01 | 02 | 33 | | |
| 71 | YN | 1 | 38631 | 01 | | | | |
| 72 | YN | 1 | 38634 | 01 | 12 | | | |
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| 97 | YNCS | | 35514 | 33 | | | | |
| 98 | YNCS | | 35516 | 33 | | | | |
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| 100 | YNCS | | 35518 | 12 | | | | |
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| 102 | YNCS | | 35483 | 12 | 14 | 32 | 33 | 34 |
| 103 | YNCS | | 35489 | 12 | 14 | | | |
| 104 | YNCS | | 35490 | 12 | 13 | 14 | | |
| 105 | YNCS | | 35490 | 12 | | | | |
| 106 | YNCS | | 35519 | 12 | | | | |
| 107 | YNCS | | 52298 | 14 | | | | |
| 108 | BM | 3 | 11511 | 54 | | | | |
| 109 | BM | 3 | 16061 | 33 | 61 | | | |
| 110 | BM | 3 | 16063 | 41 | 42 | 57 | 58 | 61 |
| 111 | BM | 3 | 30051 | 57 | 61 | 91 | | |
| 112 | BM | 3 | 34011 | 42 | 57 | 61 | | |
| 113 | BM | 3 | 34012 | 41 | 57 | 58 | | |
| 114 | BM | 3 | 34013 | 43 | 91 | | | |
| 115 | BM | 3 | 34018 | 41 | 42 | 58 | 59 | 72 |
| 116 | BM | 3 | 34024 | 43 | 57 | 61 | | |
| 117 | BM | 3 | 34031 | 53 | 54 | | | |
| 118 | BM | 3 | 34036 | 41 | 52 | 59 | 61 | |
| 119 | BM | 3 | 34037 | 41 | 57 | 59 | | |
| 120 | BM | 3 | 34039 | 41 | 57 | 59 | | |
| 121 | BM | 3 | 34047 | 41 | 57 | 59 | 61 | 81 |
| 122 | BM | 3 | 34049 | 59 | 61 | | | |
| 123 | BM | 3 | 34050 | 41 | 59 | 61 | | |
| 124 | BM | 3 | 34052 | 54 | 60 | | | |
| 125 | BM | 3 | 34053 | 41 | 54 | 56 | 58 | |
| 126 | BM | 3 | 34058 | 42 | 57 | 61 | 91 | |
| 127 | BM | 3 | 34067 | 33 | 42 | 57 | 60 | 61 |
| 128 | BM | 3 | 34068 | 41 | 53 | 55 | 56 | 58 |
| 129 | BM | 3 | 34070 | 53 | 54 | | | |
| 130 | BM | 3 | 34071 | 41 | 60 | | | |
| 131 | BM | 3 | 34072 | 41 | 52 | 81 | | |
| 132 | BM | 3 | 34073 | 42 | 56 | 57 | 61 | |
| 133 | BM | 3 | 34410 | 54 | 56 | | | |
| 134 | BM | 3 | 34411 | 41 | 55 | | | |
| 135 | BM | 3 | 34412 | 55 | | | | |
| 136 | BM | 3 | 34413 | 55 | 58 | | | |
| 137 | BM | 3 | 34414 | 42 | 56 | 61 | | |

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| 140 | BM | 3 | 42024 | 41 | 52 | 54 | 56 | 60 | 72 |
| 141 | BM | 3 | 62001 | 42 | 60 | 62 | | | |
| 142 | BM | 3 | 86049 | 53 | 55 | | | | |
| 143 | BM | 3 | 86050 | 60 | 61 | | | | |
| 144 | BM | 3 | 94004 | 57 | 59 | 61 | 81 | | |
| 145 | BM | 3 | 94592 | 57 | 61 | | | | |
| 146 | BM | 3 | 94593 | 41 | 57 | 61 | | | |
| 147 | BM | 3 | 94633 | 41 | 59 | 61 | | | |
| 148 | BM | 2 | 11513 | 33 | 42 | 58 | 61 | 71 | 72 |
| 149 | BM | 2 | 16062 | 33 | 41 | 58 | 61 | | |
| 150 | BM | 2 | 34014 | 33 | 42 | 61 | 72 | | |
| 151 | BM | 2 | 34015 | 33 | 42 | 58 | 61 | 72 | |
| 152 | BM | 2 | 34019 | 41 | 58 | 59 | | | |
| 153 | BM | 2 | 34021 | 33 | 41 | 58 | | | |
| 154 | BM | 2 | 34027 | 41 | 52 | 54 | 57 | 59 | 61 |
| 155 | BM | 2 | 34032 | 54 | 56 | | | | |
| 156 | BM | 2 | 34033 | 54 | 58 | | | | |
| 157 | BM | 2 | 34042 | 33 | 41 | 57 | 61 | | |
| 158 | BM | 2 | 34043 | 32 | 33 | 41 | 59 | 61 | |
| 159 | BM | 2 | 34044 | 72 | | | | | |
| 160 | BM | 2 | 34051 | 33 | 41 | 59 | 61 | | |
| 161 | BM | 2 | 34054 | 58 | 59 | 91 | | | |
| 162 | BM | 2 | 34059 | 41 | 57 | 61 | | | |
| 163 | BM | 2 | 34060 | 42 | 57 | 91 | | | |
| 164 | BM | 2 | 34061 | 52 | 54 | 58 | 60 | | |
| 165 | BM | 2 | 34066 | 33 | 52 | 54 | 61 | 81 | |
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| 173 | BM | 2 | 42342 | 31 | 32 | 33 | 42 | 58 | 62 |
| 174 | BM | 2 | 54119 | 01 | | | | | |
| 175 | BM | 2 | 54200 | 01 | | | | | |
| 176 | BM | 2 | 54201 | 01 | | | | | |
| 177 | BM | 2 | 94005 | 33 | 58 | 71 | 72 | | |
| 178 | BM | 1 | 11514 | 33 | 42 | 58 | 61 | 72 | 81 |
| 179 | BM | 1 | 34016 | 33 | 58 | 82 | | | |
| 180 | BM | 1 | 34025 | 33 | 57 | 59 | 61 | | |
| 181 | BM | 1 | 34026 | 33 | 42 | 59 | 61 | 82 | |
| 182 | BM | 1 | 34028 | 33 | 41 | 59 | 61 | 82 | |
| 183 | BM | 1 | 34029 | 41 | 57 | 58 | 61 | | |
| 184 | BM | 1 | 34030 | 41 | 57 | 58 | 61 | | |
| 185 | BM | 1 | 34035 | 52 | 54 | 56 | 58 | | |
| 186 | BM | 1 | 34055 | 53 | 58 | | | | |
| 187 | BM | 1 | 34056 | 42 | 58 | 61 | 82 | | |
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| 190 | BM | 1 | 34418 | 33 | 82 | | | | |
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| 198 | BM | C | 34023 | 33 | 41 | 42 | 59 | 61 | |
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| 203 | BM | C | 34078 | 42 | 55 | 58 | 61 | 91 | |
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| 209 | BM | CS34076 | 33 | 41 | 42 | 59 | 61 | 72 82 |
| 210 | BM | CS34077 | 33 | 41 | 58 | 61 | 72 | |
| 211 | BM | CS34080 | 33 | 41 | 42 | 59 | 61 | 72 |
| 212 | BM | CS35476 | 31 | 43 | | | | |
| 213 | BM | CS35478 | 11 | 13 | | | | |
| 214 | BM | CS35479 | 11 | | | | | |
| 215 | BM | CS35480 | 32 | 33 | 34 | 82 | | |
| 216 | BM | CS44375 | 32 | 33 | 34 | | | |
| 217 | BM | CM34082 | 33 | 41 | 42 | 57 | 59 | 61 72 73 |
| 218 | BM | CM34083 | 33 | 41 | 42 | 57 | 61 | 72 73 |
| 219 | BM | CM35483 | 01 | 02 | 14 | 33 | 82 | |
| 220 | BM | CM35489 | 13 | 82 | | | | |
| 221 | BM | CM35490 | 13 | 82 | | | | |
| 222 | BM | CM35492 | 12 | 34 | | | | |
| 223 | BM | CM50045 | 33 | 34 | 55 | 58 | | |
| 224 | BM | CM52298 | 13 | 14 | | | | |
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| 244 | AN | 62358 | 54 | | | | | |
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| 247 | AN | 62361 | 60 | | | | | |
| 248 | AN | 62362 | 43 | 57 | 61 | | | |
| 249 | AN | 62363 | 59 | | | | | |
| 250 | AN | 62364 | 52 | 61 | | | | |
| 251 | AN | 62365 | 41 | 58 | 62 | | | |
| 252 | AN | 62366 | 41 | 57 | 59 | | | |
| 253 | AN | 62367 | 53 | 54 | | | | |
| 254 | AN | 62368 | 53 | | | | | |
| 255 | AN | 62369 | 54 | | | | | |
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| 258 | AN | 62372 | 59 | 61 | | | | |
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| 260 | AN | 79350 | 52 | 54 | | | | |
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| 262 | AN | 79357 | 41 | 59 | 72 | | | |
| 263 | AN | 94554 | 42 | 57 | 59 | 61 | | |
| 264 | AN | 94555 | 41 | 57 | 61 | | | |
| 265 | AN | 94556 | 41 | 59 | 61 | | | |
| 266 | AN | 94557 | 54 | 59 | | | | |
| 267 | AN | 99350 | 41 | 59 | 61 | | | |
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| 269 | AN | 99352 | 41 | 59 | 61 | | | |
| 270 | AN | 99353 | 53 | | | | | |
| 271 | SM | 3 34009 | 41 | 59 | | | | |
| 272 | SM | 3 42020 | 41 | 42 | 62 | | | |
| 273 | SM | 3 42021 | 41 | 58 | | | | |
| 274 | SM | 3 50303 | 01 | | | | | |
| 275 | SM | 3 50928 | 01 | | | | | |

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| 277 | SM | 3 | 72001 | 41 | 52 | 59 | 61 | |
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| 279 | SM | 3 | 84225 | 53 | 55 | 60 | 61 | |
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| 285 | SM | 3 | 86022 | 41 | 60 | | | |
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| 287 | SM | 3 | 86024 | 42 | 60 | 62 | 91 | |
| 288 | SM | 3 | 86025 | 53 | | | | |
| 289 | SM | 3 | 86031 | 41 | 60 | 82 | | |
| 290 | SM | 3 | 86035 | 41 | 60 | | | |
| 291 | SM | 3 | 86036 | 41 | 60 | | | |
| 292 | SM | 3 | 86038 | 43 | 60 | | | |
| 293 | SM | 3 | 86365 | 52 | 54 | 61 | | |
| 294 | SM | 3 | 86366 | 41 | 42 | 57 | 61 | |
| 295 | SM | 3 | 94530 | 41 | 59 | 61 | | |
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| 315 | SM | 1 | 44451 | 32 | 60 | | | |
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| 332 | SM | C | 77267 | 32 | 33 | | | |
| 333 | SM | C | 86039 | 33 | 41 | 51 | 52 | 53 |
| 334 | SM | C | 86373 | 33 | 41 | 72 | 54 | 58 |
| 335 | SM | C | 86374 | 33 | 41 | 72 | | |
| 336 | SM | CS | 25371 | 12 | | | | |
| 337 | SM | CS | 35476 | 11 | 12 | | | |
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| 340 | SM | CS | 35480 | 13 | 14 | | | |
| 341 | SM | CS | 35496 | 35 | | | | |
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| 347 | SM | CS77268 | 33 | 34 | | | | |
| 348 | SM | CS86030 | 04 | | | | | |
| 349 | SM | CM35483 | 14 | 33 | 58 | | | |
| 350 | SM | CM35489 | 12 | 13 | 14 | | | |
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| 353 | SM | CM52298 | 14 | 33 | | | | |
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| 356 | EN | 311090 | 41 | 57 | 61 | | | |
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| 358 | EN | 311092 | 42 | 57 | 61 | | | |
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| 360 | EN | 315330 | 41 | 57 | 61 | | | |
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| 364 | EN | 328085 | 02 | 42 | 51 | 53 | 55 | 58 |
| 365 | EN | 320317 | 41 | 54 | 56 | 57 | 61 | |
| 366 | EN | 320313 | 42 | 54 | 56 | 61 | 71 | |
| 367 | EN | 320321 | 41 | 57 | 61 | | | |
| 368 | EN | 320323 | 42 | 52 | 54 | 59 | 61 | |
| 369 | EN | 320328 | 41 | 55 | 61 | | | |
| 370 | EN | 320336 | 41 | 61 | | | | |
| 371 | EN | 320337 | 41 | 61 | | | | |
| 372 | EN | 320345 | 41 | 57 | 61 | | | |
| 373 | EN | 320349 | 41 | 57 | 61 | | | |
| 374 | EN | 320353 | 41 | 56 | 61 | | | |
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| 376 | EN | 320355 | 41 | 57 | 61 | | | |
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| 381 | EN | 320378 | 41 | 57 | 59 | 61 | 81 | |
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| 384 | EN | 321013 | 41 | 57 | 61 | | | |
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| 387 | EN | 321016 | 41 | 57 | 61 | | | |
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| 389 | EN | 321018 | 41 | 57 | 59 | 61 | | |
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| 391 | EN | 321021 | 01 | | | | | |
| 392 | EN | 321024 | 41 | 52 | 54 | 59 | 61 | |
| 393 | EN | 321026 | 41 | 57 | 61 | | | |
| 394 | EN | 321027 | 41 | 57 | 61 | | | |
| 395 | EN | 321028 | 41 | 57 | 61 | | | |
| 396 | EN | 321029 | 41 | 52 | 54 | 61 | | |
| 397 | EN | 321030 | 41 | 52 | 54 | 61 | | |
| 398 | EN | 321033 | 41 | 54 | 61 | | | |
| 399 | EN | 321034 | 41 | 57 | 61 | | | |
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| 402 | EN | 321057 | 41 | 54 | 56 | 81 | | |
| 403 | EN | 321059 | 54 | 59 | 61 | | | |
| 404 | EN | 321072 | 55 | 61 | | | | |
| 405 | EN | 321079 | 42 | 57 | 59 | 61 | 81 | |
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| 407 | EN | 321447 | 54 | 59 | 61 | | | |
| 408 | EN | 3240529 | 81 | | | | | |
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| 410 | EN | 3251011 | 01 | | | | | |
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| 417 | EN | 3 | 98335 | 42 | 82 | | | | |
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| 419 | EN | 2 | 11447 | 54 | 72 | | | | |
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| 421 | EN | 2 | 30324 | 42 | 57 | 61 | | | |
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| 423 | EN | 2 | 30326 | 41 | 52 | 54 | 61 | | |
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| 425 | EN | 2 | 30331 | 41 | 59 | 61 | | | |
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| 436 | EN | 2 | 30372 | 41 | 57 | 59 | 61 | 81 | |
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| 444 | EN | 2 | 31044 | 41 | 57 | 59 | 61 | 81 | |
| 445 | EN | 2 | 31049 | 42 | 61 | 71 | 81 | | |
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| 459 | EN | 2 | 48256 | 41 | 52 | 54 | 61 | | |
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| 469 | EN | 1 | 30340 | 41 | 52 | 54 | 59 | 61 | |
| 470 | EN | 1 | 30348 | 41 | 52 | 54 | 59 | 61 | 81 |
| 471 | EN | 1 | 30350 | 41 | 52 | 54 | 57 | 61 | |
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| 473 | EN | 1 | 30915 | 41 | 52 | 54 | 57 | 59 | 61 81 |
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| 475 | EN | 1 | 31025 | 41 | 57 | 61 | | | |
| 476 | EN | 1 | 31031 | 12 | 41 | 58 | 61 | | |
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| 479 | EN | 1 | 31041 | 41 | 52 | 54 | 61 | | |
| 480 | EN | 1 | 31042 | 41 | 52 | 54 | 57 | 61 | |
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| 487 | EN | 1 | 51168 | 14 | | | | | |
| 488 | EN | 1 | 54827 | 01 | 04 | | | | |
| 489 | EN | C | 30359 | 41 | 53 | 54 | 61 | | |
| 490 | EN | C | 30674 | 32 | 33 | 41 | 57 | 59 | 61 81 |
| 491 | EN | C | 31045 | 41 | 52 | 54 | 57 | 61 | |
| 492 | EN | C | 31046 | 41 | 52 | 54 | 57 | 61 | |
| 493 | EN | C | 31047 | 41 | 54 | 57 | 58 | 61 | |
| 494 | EN | C | 31077 | 11 | 41 | 52 | 54 | 61 | |
| 495 | EN | C | 31095 | 41 | 52 | 54 | 56 | 61 | |
| 496 | EN | C | 35432 | 01 | 33 | 42 | 58 | 61 | 82 |
| 497 | EN | C | 35433 | 12 | | | | | |
| 498 | EN | C | 35885 | 31 | 32 | 33 | 41 | 61 | |
| 499 | EN | C | 35886 | 12 | | | | | |
| 500 | EN | C | 42278 | 31 | | | | | |
| 501 | EN | C | 42279 | 33 | 41 | 42 | 61 | | |
| 502 | EN | C | 42367 | 31 | | | | | |
| 503 | EN | C | 51069 | 61 | 82 | | | | |
| 504 | EN | C | 51169 | 02 | 14 | | | | |
| 505 | EN | C | 51475 | 12 | | | | | |
| 506 | EN | C | 51476 | 55 | 58 | 71 | | | |
| 507 | EN | C | 51477 | 55 | 71 | | | | |
| 508 | EN | C | 51478 | 55 | 71 | | | | |
| 509 | EN | C | 54804 | 11 | 13 | | | | |
| 510 | EN | C | 98021 | 33 | 42 | 58 | 61 | 71 | 72 |
| 511 | EN | CS | 31410 | 42 | 58 | 60 | 82 | | |
| 512 | EN | CS | 31455 | 42 | 55 | 61 | 71 | | |
| 513 | EN | CS | 31456 | 58 | 61 | 71 | 82 | | |
| 514 | EN | CS | 35072 | 01 | 02 | 33 | | | |
| 515 | EN | CS | 35362 | 01 | 02 | 04 | 31 | 32 | |
| 516 | EN | CS | 35476 | 11 | 13 | | | | |
| 517 | EN | CS | 35478 | 11 | 13 | 14 | | | |
| 518 | EN | CS | 35479 | 11 | | | | | |
| 519 | EN | CS | 35480 | 14 | 33 | 34 | | | |
| 520 | EN | CS | 35884 | 12 | 13 | 14 | | | |
| 521 | EN | CS | 35887 | 12 | | | | | |
| 522 | EN | CS | 44375 | 13 | 14 | 32 | 34 | | |
| 523 | EN | CS | 51073 | 33 | | | | | |
| 524 | EN | CS | 51206 | 33 | 82 | | | | |
| 525 | EN | CS | 98280 | 12 | | | | | |
| 526 | EN | CS | 98281 | 12 | | | | | |
| 527 | EN | CM | 20060 | 13 | 14 | 33 | | | |
| 528 | EN | CM | 31457 | 12 | | | | | |
| 529 | EN | CM | 35365 | 11 | | | | | |
| 530 | EN | CM | 35366 | 04 | 11 | 12 | 13 | | |
| 531 | EN | CM | 35483 | 12 | 14 | 33 | | | |
| 532 | EN | CM | 35489 | 12 | 14 | | | | |
| 533 | EN | CM | 35490 | 12 | 13 | 14 | | | |
| 534 | EN | CM | 35492 | 12 | 14 | | | | |
| 535 | EN | CM | 46616 | 12 | | | | | |
| 536 | EN | CM | 51072 | 12 | | | | | |
| 537 | EN | CM | 51075 | 12 | | | | | |
| 538 | EN | CM | 51179 | 33 | | | | | |
| 539 | EN | CM | 52298 | 12 | 13 | 14 | | | |
| 540 | EN | CM | 54806 | 42 | 61 | 71 | 82 | | |
| 541 | GMG | 3 | 14086 | 41 | 53 | 61 | | | |
| 542 | GMG | 3 | 14564 | 53 | 61 | | | | |
| 543 | GMG | 3 | 14565 | 41 | 53 | 61 | | | |
| 544 | GMG | 3 | 14570 | 53 | 54 | 61 | | | |
| 545 | GMG | 3 | 15305 | 41 | 52 | 53 | 54 | 59 | 61 |
| 546 | GMG | 3 | 15307 | 41 | 53 | 54 | 55 | 56 | 60 61 |
| 547 | GMG | 3 | 15314 | 54 | 55 | 58 | 61 | | |
| 548 | GMG | 3 | 15315 | 41 | 52 | 54 | 59 | 61 | |
| 549 | GMG | 3 | 16027 | 53 | 54 | 55 | 56 | 61 | |
| 550 | GMG | 3 | 16033 | 42 | 57 | 59 | 61 | | |
| 551 | GMG | 3 | 16034 | 01 | 41 | 59 | 61 | | |

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SOURCE CARD LISTING FOR
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| | | | | | | | | |
|-----|-----|---|-------|----|----|----|----|-------|
| 552 | GMG | 3 | 16304 | 42 | 57 | 61 | 91 | |
| 553 | GMG | 3 | 16334 | 41 | 52 | 54 | 59 | 61 |
| 554 | GMG | 3 | 16398 | 41 | 57 | 59 | 61 | |
| 555 | GMG | 3 | 16399 | 41 | 57 | 59 | 61 | |
| 556 | GMG | 3 | 16400 | 41 | 42 | 57 | 61 | 91 |
| 557 | GMG | 3 | 16402 | 41 | 42 | 59 | 61 | |
| 558 | GMG | 3 | 16403 | 41 | 53 | 57 | 59 | 61 |
| 559 | GMG | 3 | 16404 | 41 | 53 | 60 | 61 | |
| 560 | GMG | 3 | 16405 | 41 | 42 | 57 | 61 | |
| 561 | GMG | 3 | 16407 | 41 | 52 | 54 | 61 | |
| 562 | GMG | 3 | 16408 | 42 | 57 | 59 | 61 | |
| 563 | GMG | 3 | 17079 | 41 | 52 | 54 | 59 | 61 |
| 564 | GMG | 3 | 17081 | 41 | 52 | 54 | 59 | 61 |
| 565 | GMG | 3 | 17365 | 41 | 52 | 54 | 61 | |
| 566 | GMG | 3 | 18017 | 41 | 57 | 61 | | |
| 567 | GMG | 3 | 18022 | 41 | 53 | 55 | 57 | 61 |
| 568 | GMG | 3 | 24023 | 41 | 42 | 53 | 55 | 57 61 |
| 569 | GMG | 3 | 24025 | 41 | 59 | 61 | | |
| 570 | GMG | 3 | 24390 | 53 | 61 | | | |
| 571 | GMG | 3 | 24391 | 53 | 54 | 61 | | |
| 572 | GMG | 3 | 24497 | 53 | 54 | 61 | | |
| 573 | GMG | 3 | 24500 | 41 | 59 | 61 | | |
| 574 | GMG | 3 | 24501 | 42 | 59 | 81 | | |
| 575 | GMG | 3 | 24502 | 52 | 54 | 59 | 61 | |
| 576 | GMG | 3 | 24503 | 41 | 53 | 61 | | |
| 577 | GMG | 3 | 28016 | 53 | 61 | | | |
| 578 | GMG | 3 | 28019 | 53 | 61 | | | |
| 579 | GMG | 3 | 28020 | 55 | | | | |
| 580 | GMG | 3 | 29236 | 41 | 57 | 59 | 61 | |
| 581 | GMG | 3 | 29238 | 41 | 42 | 59 | 61 | 81 |
| 582 | GMG | 3 | 29239 | 41 | 59 | 61 | | |
| 583 | GMG | 3 | 29549 | 41 | 57 | 59 | 61 | |
| 584 | GMG | 3 | 40525 | 57 | 59 | 61 | 81 | |
| 585 | GMG | 3 | 46030 | 02 | 55 | 61 | | |
| 586 | GMG | 3 | 48241 | 01 | 41 | 59 | 61 | |
| 587 | GMG | 3 | 51011 | 01 | | | | |
| 588 | GMG | 3 | 51026 | 01 | | | | |
| 589 | GMG | 3 | 54192 | 01 | 41 | 59 | | |
| 590 | GMG | 3 | 54759 | 01 | 42 | 59 | 60 | |
| 591 | GMG | 3 | 54760 | 53 | 54 | 61 | | |
| 592 | GMG | 3 | 54761 | 01 | 41 | 53 | 54 | 61 |
| 593 | GMG | 3 | 79272 | 54 | 59 | 61 | | |
| 594 | GMG | 3 | 92336 | 42 | 57 | 61 | 81 | |
| 595 | GMG | 3 | 94424 | 42 | 57 | 59 | 61 | 81 |
| 596 | GMG | 3 | 94508 | 57 | 61 | | | |
| 597 | GMG | 2 | 14043 | 41 | 57 | 61 | | |
| 598 | GMG | 2 | 14566 | 61 | 71 | | | |
| 599 | GMG | 2 | 14567 | 41 | 53 | 55 | 61 | |
| 600 | GMG | 2 | 14798 | 41 | 53 | 61 | | |
| 601 | GMG | 2 | 15023 | 41 | 53 | 57 | 61 | |
| 602 | GMG | 2 | 15309 | 41 | 59 | 61 | | |
| 603 | GMG | 2 | 15311 | 41 | 42 | 59 | 61 | 71 81 |
| 604 | GMG | 2 | 15312 | 41 | 54 | 59 | 61 | |
| 605 | GMG | 2 | 16004 | 42 | 56 | 59 | 61 | 72 |
| 606 | GMG | 2 | 16021 | 41 | 52 | 54 | 61 | |
| 607 | GMG | 2 | 16022 | 32 | | | | |
| 608 | GMG | 2 | 16054 | 42 | 59 | 61 | 72 | |
| 609 | GMG | 2 | 16099 | 41 | 51 | 52 | 53 | 54 61 |
| 610 | GMG | 2 | 17366 | 53 | 55 | 57 | | |
| 611 | GMG | 2 | 17367 | 41 | 59 | 61 | | |
| 612 | GMG | 2 | 18419 | 41 | 57 | 59 | 61 | |
| 613 | GMG | 2 | 24026 | 41 | 53 | 61 | | |
| 614 | GMG | 2 | 24027 | 41 | 57 | 61 | | |
| 615 | GMG | 2 | 24393 | 61 | 71 | | | |
| 616 | GMG | 2 | 28017 | 42 | 57 | 58 | 61 | 82 |
| 617 | GMG | 2 | 28025 | 53 | 55 | | | |
| 618 | GMG | 2 | 28362 | 26 | | | | |
| 619 | GMG | 2 | 29237 | 41 | 53 | 54 | 61 | |
| 620 | GMG | 2 | 29243 | 41 | 52 | 54 | 59 | 61 |

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SOURCE CARD LISTING FOR OFFLINE READ ETAM TOSCR

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|-----|-----|----|-------|----|----|----|----|----|----|----|----|----|--|--|--|--|--|--|--|--|
| 621 | GMG | 2 | 29245 | 41 | 57 | 59 | 61 | | | | | | | | | | | | | |
| 622 | GMG | 2 | 29246 | 41 | 52 | 54 | 56 | 61 | | | | | | | | | | | | |
| 623 | GMG | 2 | 29248 | 41 | 54 | 56 | 61 | | | | | | | | | | | | | |
| 624 | GMG | 2 | 29249 | 41 | 54 | 56 | 61 | | | | | | | | | | | | | |
| 625 | GMG | 2 | 29250 | 41 | 52 | 54 | 61 | | | | | | | | | | | | | |
| 626 | GMG | 2 | 29251 | 41 | 54 | 56 | 61 | 81 | | | | | | | | | | | | |
| 627 | GMG | 2 | 29252 | 01 | 02 | 12 | | | | | | | | | | | | | | |
| 628 | GMG | 2 | 36450 | 01 | 02 | | | | | | | | | | | | | | | |
| 629 | GMG | 2 | 36451 | 01 | 02 | | | | | | | | | | | | | | | |
| 630 | GMG | 2 | 51114 | 01 | 11 | | | | | | | | | | | | | | | |
| 631 | GMG | 2 | 54708 | 01 | | | | | | | | | | | | | | | | |
| 632 | GMG | 2 | 54813 | 01 | | | | | | | | | | | | | | | | |
| 633 | GMG | 2 | 54814 | 01 | 53 | 54 | | | | | | | | | | | | | | |
| 634 | GMG | 2 | 54815 | 01 | | | | | | | | | | | | | | | | |
| 635 | GMG | 1 | 14062 | 61 | 71 | | | | | | | | | | | | | | | |
| 636 | GMG | 1 | 15313 | 41 | 51 | 52 | 53 | 54 | 57 | 61 | 81 | | | | | | | | | |
| 637 | GMG | 1 | 16023 | 33 | 42 | 61 | | | | | | | | | | | | | | |
| 638 | GMG | 1 | 18018 | 61 | 71 | | | | | | | | | | | | | | | |
| 639 | GMG | 1 | 18021 | 41 | 53 | 55 | 61 | | | | | | | | | | | | | |
| 640 | GMG | 1 | 28018 | 42 | 53 | 55 | 57 | 58 | 82 | | | | | | | | | | | |
| 641 | GMG | 1 | 29253 | 41 | 52 | 54 | 57 | 61 | | | | | | | | | | | | |
| 642 | GMG | 1 | 29254 | 41 | 54 | 61 | 81 | | | | | | | | | | | | | |
| 643 | GMG | 1 | 29255 | 41 | 54 | 57 | 61 | 81 | | | | | | | | | | | | |
| 644 | GMG | 1 | 29256 | 41 | 54 | 57 | 61 | 81 | | | | | | | | | | | | |
| 645 | GMG | 1 | 29551 | 41 | 54 | 57 | 61 | 81 | | | | | | | | | | | | |
| 646 | GMG | 1 | 29552 | 41 | 54 | 57 | 59 | 61 | 81 | | | | | | | | | | | |
| 647 | GMG | 1 | 38344 | 01 | 12 | | | | | | | | | | | | | | | |
| 648 | GMG | 1 | 38345 | 01 | 11 | 12 | | | | | | | | | | | | | | |
| 649 | GMG | 1 | 38346 | 01 | 02 | | | | | | | | | | | | | | | |
| 650 | GMG | 1 | 38887 | 01 | 02 | | | | | | | | | | | | | | | |
| 651 | GMG | 1 | 38888 | 14 | 33 | | | | | | | | | | | | | | | |
| 652 | GMG | 1 | 51167 | 12 | | | | | | | | | | | | | | | | |
| 653 | GMG | 1 | 51168 | 14 | | | | | | | | | | | | | | | | |
| 654 | GMG | 1 | 54816 | 01 | 12 | 14 | | | | | | | | | | | | | | |
| 655 | GMG | 1 | 54813 | 11 | 12 | | | | | | | | | | | | | | | |
| 656 | GMG | 1 | 54844 | 02 | 33 | | | | | | | | | | | | | | | |
| 657 | GMG | 1 | 98255 | 11 | | | | | | | | | | | | | | | | |
| 658 | GMG | C | 14042 | 42 | 51 | 52 | 53 | 54 | 58 | 61 | 71 | | | | | | | | | |
| 659 | GMG | C | 14044 | 33 | 34 | 55 | 58 | 61 | 72 | | | | | | | | | | | |
| 660 | GMG | C | 14045 | 51 | 52 | 53 | 54 | 55 | 56 | 61 | 72 | | | | | | | | | |
| 661 | GMG | C | 14064 | 12 | 14 | | | | | | | | | | | | | | | |
| 662 | GMG | C | 16032 | 33 | 61 | | | | | | | | | | | | | | | |
| 663 | GMG | C | 16411 | 33 | 61 | | | | | | | | | | | | | | | |
| 664 | GMG | C | 17426 | 71 | | | | | | | | | | | | | | | | |
| 665 | GMG | C | 17427 | 42 | 51 | 52 | 53 | 54 | 55 | 56 | 58 | 61 | | | | | | | | |
| 666 | GMG | C | 20276 | 33 | | | | | | | | | | | | | | | | |
| 667 | GMG | C | 38892 | 01 | 11 | | | | | | | | | | | | | | | |
| 668 | GMG | C | 38893 | 33 | | | | | | | | | | | | | | | | |
| 669 | GMG | C | 38897 | 12 | | | | | | | | | | | | | | | | |
| 670 | GMG | C | 51079 | 14 | 33 | | | | | | | | | | | | | | | |
| 671 | GMG | C | 51169 | 14 | | | | | | | | | | | | | | | | |
| 672 | GMG | C | 54766 | 01 | 53 | 54 | 61 | | | | | | | | | | | | | |
| 673 | GMG | C | 98336 | 33 | | | | | | | | | | | | | | | | |
| 674 | GM | CS | 17417 | 33 | 61 | | | | | | | | | | | | | | | |
| 675 | GM | CS | 35341 | 11 | 12 | | | | | | | | | | | | | | | |
| 676 | GM | CS | 35476 | 12 | 13 | 35 | | | | | | | | | | | | | | |
| 677 | GM | CS | 35478 | 13 | 14 | | | | | | | | | | | | | | | |
| 678 | GM | CS | 35479 | 11 | | | | | | | | | | | | | | | | |
| 679 | GM | CS | 35480 | 14 | 33 | 34 | | | | | | | | | | | | | | |
| 680 | GM | CS | 44375 | 12 | 14 | 32 | | | | | | | | | | | | | | |
| 681 | GM | CS | 51153 | 12 | 14 | | | | | | | | | | | | | | | |
| 682 | GM | CS | 51154 | 33 | 34 | | | | | | | | | | | | | | | |
| 683 | GM | CS | 51155 | 12 | 13 | 14 | | | | | | | | | | | | | | |
| 684 | GM | CS | 51206 | 12 | 14 | 33 | | | | | | | | | | | | | | |
| 685 | GM | CS | 54196 | 33 | | | | | | | | | | | | | | | | |
| 686 | GM | CM | 20291 | 33 | | | | | | | | | | | | | | | | |
| 687 | GM | CM | 35483 | 14 | 33 | | | | | | | | | | | | | | | |
| 688 | GM | CM | 35489 | 12 | 14 | | | | | | | | | | | | | | | |
| 689 | GM | CM | 35490 | 12 | 14 | | | | | | | | | | | | | | | |

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OFFLINE READ ETAM TDSCR

| | | | | |
|-----|----|---------|----|-------|
| 690 | GM | CM35492 | 12 | |
| 691 | GM | CM35551 | 33 | 61 |
| 692 | GM | CM35552 | 11 | 12 |
| 693 | GM | CM35553 | 12 | 14 33 |
| 694 | GM | CM51156 | 33 | |
| 695 | GM | CM51157 | 12 | |
| 696 | GM | CM52298 | 14 | |

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OFFLINE READ ETAM VCDESC

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SOURCE CARD LISTING FOR
OFFLINE READ ETAM VDATA

| | | |
|----|-------------------------|---|
| 1 | OFFLINE READ ETAM VDATA | |
| 2 | 6920LLC0032923C116-3 | BOOBY TRAP SIMULATOR, TELEPHONE |
| 3 | 6910LLC0033183A79-1 | TRANSPARENCY, M48 TANK: TRACKS, SUSPENSION |
| 4 | 6930LLC0010082C30-1 | F-4B AIRCRAFT COCKPIT PROCEDURES TRAINER |
| 5 | 6910LLC0015641H4-1 | AEROLOGY DISPLAY SET |
| 6 | 6930LLC0014079E6-1 | EJECTION SEAT, UNIVERSAL |
| 7 | 6910LLC00206112C01A | TOTAL DIFFERENTIAL (MATH) TRAINING AID |
| 8 | 6940LLC00037114821B-1 | ASW SYSTEM SIMULATOR-JEZEBEL |
| 9 | 694000664143515Z1-1 | APS-T3, ULTRASONIC TRAINER |
| 10 | 6910LLC00363629EX18 | FUEL PUMP, AUTOMOTIVE, TRAINING AID |
| 11 | 6910LLC00366518F22B-1 | FLASH BLINDNESS INDOCTRINATION TRAINER |
| 12 | 694000527190126A11 | ELECTRONIC CIRCUIT TRAINER |
| 13 | 69200082891653C52E-1 | TARGET SCORING MECHANISM, SINGLE POP-UP |
| 14 | 69200064992823C55C-1 | SIMULATOR, SMALL ARMS, FLASH-NOISE |
| 15 | 6910LLC0009003E34-1 | 106MM RECOILLESS RIFLE, FIRING MECH. TRANSP. |
| 16 | 6930LLC00059315412-1 | R-4B, AIRCRAFT TACTICS TRAINER |
| 17 | 6910LLC00200917H2-1 | SIMULATOR, GENERAL PURPOSE |
| 18 | 6910LLC00206212C0-2 | GRADIENT OF A FUNCTION DEMONSTRATOR |
| 19 | 691000572307912C0-3 | TRIPLE VECTOR PRODUCT DEMONSTRATOR |
| 20 | 6910LLC00206312C0-4 | STOKES THEOREM DEMONSTRATOR |
| 21 | 6910LLC00339512C0-5 | QUINCUNX BINOMIAL EXPANSION DEMONSTRATOR |
| 22 | 6910LLC00339612C0-6 | ORTHOGRAPHIC PROJECTION DEMONSTRATOR |
| 23 | 6910LLC00339712C0-7 | TRIGONOMETRIC FUNCTION TRAINING AID |
| 24 | 6910LLC00339812C0-8 | COMPONENT INTEGRATOR DEMONSTRATOR T/A |
| 25 | 6910LLC00140312C0-10 | TRIHEDRON DEMONSTRATOR TRAINING AID |
| 26 | 6910LLC00339912C0-11 | CURVE DEMONSTRATOR TRAINING AID |
| 27 | 6910LLC00340012C0-13 | VECTOR DISTRIBUTION LAWS TRAINING AID |
| 28 | 6910LLC00340112C0-14 | SAMPLING BOX TRAINING AID |
| 29 | 6910LLC00340212C0-15 | CYLINDRIC COORDINATES DEMONSTRATOR T/A |
| 30 | 6910LLC00340312C0-16 | SPHERICAL COORDINATES DEMONSTRATOR T/A |
| 31 | 6910LLC00046812C0-17 | MATH, VECTOR ACCELERATION DEMONSTRATOR T/A |
| 32 | 6910LLC00046912C0-18 | MATH, NOMOGRAPHIC PROJECTION DEMONSTRATOR T/A |
| 33 | 6910LLC00047012C0-19 | MATH, PROJECTION, DEMONSTRATOR TRAINING AID |
| 34 | 6910LLC00117012C0-20 | POLAR PLANIMETER MATH DEMONSTRATOR |
| 35 | 6910LLC00047112C0-21 | MATH, ORDER OF DIFFERENTIATION, DEM T/A |
| 36 | 6910LLC00047212C0-22 | MATH, FINITE ROTATION, DEMONSTRATOR T/A |
| 37 | 691000523141612C0-23 | CORIOLIS FORCE DEMONSTRATOR TRAINING AID |
| 38 | 6910LLC00047312C0-24 | MATH, DIRECTION COSINE, DEMONSTRATOR T/A |
| 39 | 6910LLC00047412C0-25 | MATH, SKEW LINE, DEMONSTRATOR TRAINING AID |
| 40 | 6910LLC00161426A-11 | AMPLIFIER 3-STAGE HF LAB CKT ANALYSIS CHASSIS |
| 41 | 6910LLC00161526A-11 | ULTRASONIC, SONAR, LAB CAU-13 |
| 42 | 6910LLC00161626A-11 | VTVM/AM WITH AC/RF PROBE 27 |
| 43 | 6910LLC00161726A-11 | LAB CKT ANALYSIS CHAS GAS TUBE REGULATOR |
| 44 | 6910LLC00343726A-11 | RADAR/MICROWAVE SYSTEM LECTURE DEM UNIT |
| 45 | 6940LLC00344326A-11 | LAB CKT ANALYSIS TROUBLESHOOTING KIT, CAU-2 |
| 46 | 6910LLC00344426A-11 | VOLTAGE REGULATOR LECTURE DEM UNIT LDU-2 |
| 47 | 6940LLC00344526A-11 | FREQUENCY MODULATION LAB CKT ANALYSIS UNIT |
| 48 | 6940LLC00344726A-11 | COMPUTER, DIGITAL, BINARY READOUT UNIT, 22A |
| 49 | 6940LLC00344826A-11 | V REGULATOR LAB CKT ANALYSIS CHASSIS CAU-3A |
| 50 | 6940LLC00344926A-11 | CMPTR FJND LAB CKT ANALYSIS UNIT CAU-10 |
| 51 | 694000527190126A-11 | ELECTRONICS FUNDAMENTALS UNITS EFU-1 |
| 52 | 694000527190426A-11 | LABORATORY CIRCUIT ANALYSIS UNIT CAU-1 |
| 53 | 691000527190526A-11 | ELEK CKT LECTURE DEMONSTRATION UNIT LDU-1 |
| 54 | 691000560662326A-11 | RADAR MICROWAVE SYS/TEST EQPT TET1 TRAINER |
| 55 | 694000560662726A-11 | VOLTAGE REGULATOR LAB CKT ANAL UNIT CAU-3 |
| 56 | 691000560662826A-11 | FREQUENCY MODULATION LECTURE DEM UNIT LDU-3 |
| 57 | 694000572301526A-11 | RADAR/MICROWAVE SYS CKT ANALYSIS UNIT CAU-5 |
| 58 | 691000572301626A-11 | SONAR LECTURE DEMONSTRATION UNIT LDU-5 |
| 59 | 691000572301726A-11 | SYNCHRO LECTURE DEM UNIT WITH MOTORS LDU-6 |
| 60 | 694000572301826A-11 | SONAR LAB CIRCUIT ANALYSIS UNIT CAU-6 |
| 61 | 691000658065426A-11 | TRANSISTOR LECTURE DEMONSTRATION UNIT LDU-7 |
| 62 | 694000712304726A-11 | TRANSISTOR LAB CIRCUIT ANALYSIS UNIT CAU-7 |
| 63 | 694000850611226A-11 | SYNCHRO LAB CKT ANALYSIS UNIT CAU-9 |
| 64 | 6910LLC00116226A-11/8 | COMPUTER SYSTEM LECTURE DEM UNIT LDU-8 |
| 65 | 6910LLC00213426A-11A | RADAR CIRCUIT CHASSIS TRANSISTORIZED |

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|-----------|
| 33100 |
| 84200 |
| 18950000 |
| 264000 |
| 3791000 |
| 11000 |
| 640000 |
| 83100 |
| 2711000 |
| 102000 |
| 151531800 |
| 4229000 |
| 32500 |
| 27500 |
| 55000 |
| 38000 |
| 200000 |
| 80000 |
| 20000 |
| 7500 |
| 40000 |
| 38000 |
| 21000 |
| 21000 |
| 5000 |
| 200000 |
| 150000 |
| 120000 |
| 100000 |
| 1000 |
| 5000 |
| 150000 |
| 1800 |
| 61600 |
| 11200 |
| 2600 |
| 128300 |
| 3700 |
| 8500 |
| 14900 |
| 16000 |
| 3900 |
| 29000 |
| 531500 |
| 30000 |

SECTION D.6

SOURCE LISTINGS OF PL/1 PROGRAMS

The following represents the source program listings of the eighteen PL/1 program modules involved in the ETAM project up through the Range-of-Effect search and search results print.

In the pages following, the programs are source-listed in alphabetic order, P1, P2, P3, ..., P20. The order presented immediately below is the logical order of processing.

| <u>Program Name</u> | <u>Program Description</u> |
|---------------------|---|
| P18 | Initialization of the Master Reference data set, ETAM/MREF |
| P16 | Initialization of the Descriptor Master Index, ETAM/DIND |
| P14 | Initialization of the Course data file, ETAM/COURSE |
| P7 | Setup of the Course CIN and CDP directories (ETAM/DCIN and ETAM/DCDP, respectively) |
| P7A | Course Descriptor file load (ETAM/DESC) |
| P7B | Printer dump of the contents of the Abbreviated Course data base by option: A = All Course data, sorted by CIN B = All Course data, sorted by CDP C = Course descriptor data |
| P8 | Load of the Abbreviated Vehicle data file (ETAM/VEHS), Vehicle Directory (ETAM/DVEH) and Vehicle Descriptor File (ETAM/VDESC). |
| P8A | Print of Abbreviated Vehicle data base contents, via Option as follows: A = Print all Vehicle records, ordered by Stock Number B = Print Descriptor data assigned to Vehicles |
| P9 | Load the Abbreviated Tasks data file (ETAM/TASKS), Tasks Directory (ETAM/DTASK), and Tasks Descriptor File (ETAM/TDESC). |
| P9A | Print, under option control, of the contents of the Abbreviated Tasks data base. Options are as follows: A = Print all Task data B = Print Descriptor data assigned to Tasks |

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| <u>Program Name</u> | <u>Program Description</u> |
|---------------------|--|
| P20 | Print, via selection, the exact Descriptor assignments to each Course, Vehicle, or Task of the system. Options are as follows: C - Print Courses V - Print Vehicles T - Print Tasks |
| P17 | Initialize the files associated with a new ETAM project. This includes files named "projectname"/ ID REC REV REJ |
| P2 | Interactive edit of the Range-of-Effects (ROE) search arguments in files projectname/ REC, REV, and REJ |
| P3 | Range-of-Effects (ROE) search module |
| P5A | Print of raw (un-edited) results of an ROE search |
| P5B | Interactive edit of the ROE search results |
| P5C | Print of the ROE extract results |
| P1 | Print contents of any of the files associated with a given project. |

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PAGE NUMBER : 1

SOURCE CARD LISTING FOR

P1: /* GENERAL-PURPOSE PROJECT FILE PRINT - THU/24/MAR/77 */

```

1  P1: /* GENERAL-PURPOSE PROJECT FILE PRINT - THU/24/MAR/77 */
2  PROC OPTIONS (MAIN) ;
3
4  /* REVISIONS :
5  24/MAR/THU/77 - VERYFIRST IMPLEMENTATION.
6
7  TUE/29/MAR/77 - MODS PRIOR TO TRANSMIT TO NCSS.
8  */
9
10 DECLARE ( DIND, COURSE, VEHS, TASKS )
11 FILE RECORD DIRECT KEYED ENV ( REGIONAL(1) ) ;
12
13 DECLARE DTYPE (21) CHAR (4) STATIC INIT ( /* FIRST 10 ARE */
14 'ID', 'EXD', 'BPT', 'RKP', /* STRICTLY CARDS */
15 'RRPJ', 'RRPK', 'VQAL', 'VARF',
16 'SCEN', 'ALTP',
17 'REC', 'REV', 'REJ', 'RESU', 'REE', /* FROM HERE ON*/
18 'EXC', 'EXJ', 'EXV', 'CMR', /* SPECIAL FORMATTING */
19 'TRER', 'FINR' ) ;
20
21 DECLARE ( FLAGS(20), IFLAG ) BIT (1) STATIC,
22 NAME4 CHAR (4) STATIC,
23 ( CARD, DLINE ) CHAR (80) STATIC,
24 DL4 CHAR (4) DEF DLINE POS (1),
25 F4 CHAR (4) DEF CARD,
26 F2 CHAR (2) DEF CARD,
27 C110 CHAR (10) DEF CARD POS (1),
28 FN CHAR (4) DEF CARD POS (3),
29 FNME CHAR (8) STATIC,
30 WAY (11:21) LABEL ;
31
32 DECLARE TTLS (21) CHAR (40) STATIC INIT (
33 'ID - PROJECT DESCRIPTION',
34 'EXD - EXTRACT DEFAULTS',
35 'BPT - BENEFIT PATTERN',
36 'RKP - RISK PROFILE',
37 'RRPJ - RISK REDUCTION PROJECTS',
38 'RRPK - RISK REDUCTION PACKAGES',
39 'VQAL - VARIABLES QUALITATIVE',
40 'VARF - VARIABLE REFERENCES',
41 'SCEN - SCENARIOS',
42 'ALTP - ALTERNATE PROJECTS',
43 'REC - COURSES ROE SEARCH ARGUMENTS',
44 'REV - VEHICLES ROE SEARCH ARGUMENTS',
45 'REJ - TASKS ROE SEARCH ARGUMENTS',
46 'RESU - ROE TOTAL SEARCH RESULTS',
47 'REE - ROE SEARCH RESULTS',
48 'EXC - EXTRACT DB - COURSES',
49 'EXJ - EXTRACT DB - JOBTASKS',
50 'EXV - EXTRACT DB - VEHICLES',
51 'CMR - COST MODEL RESULTS',
52 'TRER - TREE RESULTS',
53 'FINR - FINANCIAL RESULTS' ) ;
54
55 DECLARE I DINDEX STATIC, /* OVERALL DESCRIPTOR INDEX */
56 2 DSTART FIXED BIN, /* CKF.DESC.INDEX */
57 2 DEVD FIXED BIN,
58 2 NCAT FIXED BIN,
59 2 NDESC FIXED BIN,
60 2 CATEGORIES (15),
61 3 PCAT FIXED BIN,
62 3 SCAT FIXED BIN,
63 3 ECAT FIXED BIN,
64 2 POESC (111) FIXED BIN,
65
66 COVER (4) CHAR (80) BASED (PCOV) ;
67
68 DECLARE T2 CHAR (62) STATIC INIT (

```

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SOURCE CARD LISTING FOR
P1: /* GENERAL-PURPOSE PROJECT FILE PRINT - THU/24/MAR/77 */

```

69      '          XXXXXXXXXXX / XXXX' ),
70
71      T2TTL          CHAR (40) DEF T2 POS (23);
72      T2NAME         CHAR (10) DEF T2 POS (10);
73
74      ( ROUTE, REROUTE ) LABEL ;
75
76      /*****
77
78      DECLARE DLINE8      CHAR (8) DEF DLINE POS (8),
79      DLINECST          CHAR (36) DEF DLINE POS (34),
80      DLINE28          CHAR (4) DEF DLINE POS (28),
81      DLINE33          CHAR (36) DEF DLINE POS (33),
82      DLINE36          CHAR (36) DEF DLINE POS (36),
83      DLINE40          CHAR (40) DEF DLINE POS (40),
84      CARD7            CHAR (70) DEF CARD POS (8),
85
86      NODIR            CHAR (35) STATIC INIT
87      ( '** DIRECTORY SEARCH WAS NEGATIVE **' ),
88
89      NOAB             CHAR (36) STATIC INIT
90      ( '(NO ABBREVIATED FILE DATA AVAILABLE)' ) ;
91      DECLARE ( DISP, PTR, DPAGE, I, J, K, L, LT, NC,
92      KALL, KDEV, KTYPE, N, NER, NFIRST, NLINE,
93      NV, NPAGE, NR, VTYPE, NV,
94      NDF, NJ ) FIXED BIN STATIC,
95
96      DTTL             CHAR (23) STATIC INIT
97      ( '          PAGE NUMBER : XXXX' ),
98      DDPGE            PICTURE 'ZZZ9' DEF DTTL POS (20),
99
100     MAXLTB           FIXED BIN STATIC INIT ( 60 ) ;
101
102     DECLARE C1180     CHAR (70) DEF CARD POS (11) ;
103
104     DECLARE 1 MAST     STATIC,
105     2 REFS (40)      FIXED BIN,
106
107     1 RESULT          BASED (PR),
108     2 RTYP            PICTURE '9',
109     2 RSTAT           PICTURE '9',
110     2 RDSTAT          PICTURE '9',
111     2 RESID           CHAR (13),
112
113     1 RESC            BASED (PR),
114     ( 2 F1, 2 F2, 2 F3 ) CHAR (1),
115     2 RESCIN          CHAR (8),
116     2 RESCDP          CHAR (4),
117
118     1 REST            BASED (PR),
119     ( 2 F1, 2 F2, 2 F3 ) CHAR (1),
120     2 RATE            CHAR (5),
121     2 RAVK            CHAR (2),
122     2 JOBTASK         CHAR (6),
123
124     S16              CHAR (16) STATIC,
125     V1 (3)           LABEL ;
126
127     /*****
128
129     DECLARE 1 ACRS     STATIC,          /* ABBR. COURSE FILE */
130     2 SET1,           /* CKF.ACOURSES */
131     3 CDP             CHAR (4),
132     3 CIN             CHAR (8),
133     3 CST             CHAR (16),
134     3 NOBC            CHAR (4),
135     3 NEC             CHAR (4),
136     2 PC              CHAR (2),
137     2 SET2,

```

PAGE NUMBER : 3

SOURCE CARD LISTING FOR

P1: /* GENERAL-PURPOSE PROJECT FILE PRINT - THU/24/MAR/77 */

```

138      3 RMS      CHAR (3),
139      3 TYCRS    CHAR (2),
140      3 SVC      CHAR (1),
141      3 MI       CHAR (1),
142      2 STCD     CHAR (1),
143      2 STOTE    PICTURE '(5)9',
144      2 SET3,
145      3 TRAPS    CHAR (1),
146      3 TPC      CHAR (5),
147      2 ATTR     PICTURE '99V9',
148      2 STBK     PICTURE '99V9',
149      2 CLEN     PICTURE '999',
150      2 THRS     PICTURE '999',
151      2 LHS      PICTURE '999',
152      2 CAJB     PICTURE '(5)9V99',
153      2 CC80     CHAR (1);
154
155  DECLARE 1 CINDER (304) STATIC,          /* CRS CIN DIRECTORY */
156      2 CHCIN    CHAR (8),              /* CKF.CRS.DIRCIN */
157      2 CINPTR   FIXED BIN,
158
159      LOADCIN    CHAR (760) BASED (PLCIN),
160      COVCIN (4) CHAR (760) BASED (PTCIN);
161
162  DECLARE 1 CDPDIR (1200) STATIC,          /* CRS CDP DIRECTORY */
163      2 CHCDP    CHAR (4),              /* CKF.CRS.DIRCDP */
164      2 CDPPTR   FIXED BIN,
165
166      LOADCDP    CHAR (1200) BASED (PLCDP),
167      COVCDP (6) CHAR (1200) BASED (PTCDP);
168
169  /*****/
170
171  DECLARE 1 AVEHICLES STATIC,              /* ABBR. VEH FILE */
172      2 STOCKN   CHAR (13),             /* CKF.AVEHS */
173      2 DEVDESIG CHAR (9),
174      2 DEVNAME  CHAR (47),
175      2 DEVCOST  PICTURE '(8)9V99',
176      2 CC80     CHAR (1),
177
178      VCOST      FIXED DEC (10,2) STATIC,
179      VOVER      CHAR (80) BASED (PV80);
180
181  DECLARE 1 VEHDIR (200) STATIC,           /* VEHICLE DIRECTORY */
182      2 CHVEH    CHAR (13),             /* CKF.VEH.DIR */
183      2 VEMPTR   FIXED BIN,
184
185      COVVEH (4) CHAR (750) BASED (PTVEH),
186      LOADVEH    CHAR (750) BASED (PLVEH);
187
188  /*****/
189
190  DECLARE 1 ATASKS STATIC,                 /* ABBR. TASK FILE */
191      2 RATING   CHAR (7),              /* CKF.ATASKS */
192      2 JOBTASK  CHAR (6),
193      2 TASKTTL  CHAR (50),
194      2 FILL     CHAR (6),
195      2 BILCOST  PICTURE '(8)9V99',
196      2 CC80     CHAR (1);
197
198  DECLARE 1 TASKDIR (1200) STATIC,         /* JOBTASK FILE DIRECTORY */
199      2 CHTASK   CHAR (13),             /* CKF.TASKS.DIR */
200      2 TASKPTR  FIXED BIN,
201
202      COVTASK (12) CHAR (1500) BASED (PTTASK),
203      LOADTASK   CHAR (1500) BASED (PLTASK);
204
205  /*****/
206

```


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SOURCE CARD LISTING FOR
P1: /* GENERAL-PURPOSE PROJECT FILE PRINT - THU/24/MAR/77 */

```

207 START: NTYPE, NC, NJ, NV, NR, NN, NDF,
208         NPAGE, DPAGE, LT, NFIRST,
209         J, K = 0 ;
210 KTYPE = 1 ;
211 MAXLTB = 60 ; /* MAX NUMBER LINES PER TERMINAL PAGE */
212 LT = 100 ; /* TERMINAL LINE COUNTER */
213 DISP = 1 ; /* START OFF WITH DISPLAY ACTIVE */
214 PTR = 2 ; /* START WITH PRINTER INACTIVE */
215
216 FLCIN, FLCDP, FLVEH, FLTASK = '0'B ;
217
218 PCOV = ADDR (DINDEX) ;
219 PR = ADDR (S16) ;
220 PTCIN = ADDR (CINDER) ;
221 PTCDP = ADDR (CDPDIR) ;
222 PV80 = ADDR (AVEHICLES) ;
223 PTVEH = ADDR (VEHDIR) ;
224 PTTASK = ADDR (TASKDIR) ;
225
226 COMMENCE:
227 OPEN FILE (MREF) RECJRD INPUT,
228 FILE (ID) RECORD INPUT,
229 FILE (COURSE) INPUT,
230 FILE (DCIN) RECJRD INPUT,
231 FILE (DCDP) RECORD INPUT,
232 FILE (VEHS) INPUT,
233 FILE (DVEH) RECJRD INPUT,
234 FILE (TASKS) INPUT,
235 FILE (DTASK) RECORD INPUT,
236 FILE (REE) RECORD INPUT ;
237
238 ON ENDFILE (REE) GO TO EOJ ;
239
240 READ FILE (MREF) INTO (MAST) ;
241
242 READ FILE (ID) INTO (CARD) ;
243 T2NAME = C110 ;
244
245 DISPLAY ( ' ' ) ;
246 DISPLAY ( 'GENERAL-PURPOSE PROJECT FILE PRINT' ) ;
247 DISPLAY ( 'PROGRAM IS NOW STARTING...' ) ;
248 DISPLAY ( ' ' ) ;
249
250 /******
251
252 /* THIS IS THE CENTRAL PROMPTING AND DECODE SECTION */
253
254 PROMPTA: CARD = ' ' ;
255 PROMB: DLINE = '*** ENTER FILETYPE FOR OUTPUT, MENU, OR QUIT ***' ;
256
257 DISPLAY ( DLINE) REPLY ( CARD ) ;
258
259 J = INDEX ( CARD, ' ' ) ;
260 IF ( J = 0 ) THEN GO TO BUMKEY ;
261
262 NAME4 = SUBSTR ( CARD, 1, J ) ;
263
264 KDEV = 0 ;
265 REROUTE = PROMPTA ;
266 LPF: DO J = 1 TO 21 ;
267 KTYPE = J ;
268 IF ( NAME4 = DTYPE(J) ) THEN GO TO FINDF ;
269 END LPF ;
270
271 /* DISPLY MENU OUTPUT HERE - TO TERMINAL ONLY */
272 IF ( NAME4 = 'MENU' ) THEN GO TO TRYQUIT ;
273
274 DLINE = 'PROJECT FILETYPES FOR OUTPUT ARE : ' ;
275

```

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SOURCE CARD LISTING FOR
P1: /* GENERAL-PURPOSE PROJECT FILE PRINT - THU/24/MAR/77 */

```

276      DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;
277      DISPLAY ( ' ' ) ;
278
279 MOUT:      DO J = 1 TO 21 ;
280             DISPLAY ( (5) ' || TTLS(J) ) ;
281             END MOUT ;
282             DISPLAY ( ' ' ) ;
283             GO TO PROMPTA ;
284
285 TRYQUIT: IF ( NAME4 = 'QUIT' ) THEN GO TO FEND ;
286
287             IF ( NAME4 = 'ALL' ) THEN GO TO FINDALL ;
288
289 BUMKEY: DLINE = ' ** LAST ENTRY UNRECOGNIZED - TRY AGAIN **' ;
290             DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;
291             GO TO PROMPTA ;
292
293             /* HERE WHEN FOUND A VALID FILE TYPE; START PROCESSING */
294
295 FINDF: IF ( KTYPE > 15 ) THEN
296 BUMFILE: DO ;
297             DLINE = ' ** FILETYPE ' || NAME4 || ' IS NOT YET '
298                 || 'SERVICABLE, TRY AGAIN **' ;
299
300             IF ( PTR = 1 ) THEN
301                 PUT LIST ( DLINE ) SKIP (2) ;
302
303             DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;
304             DISPLAY ( ' ' ) ;
305
306             GO TO REROJTE ;
307             END BUMFILE ;
308
309             /* NOW, DETERMINE THE VALID OUTPUT DEVICE(S) */
310
311             IF ( KDEV > 1 ) THEN GO TO PROCESS ;
312             KDEV = KDEV + 1 ;
313
314             NPAGE = 0 ;
315             DISP, PTR = 1 ;
316
317             DISPLAY ( ' ' ) ;
318             DISPLAY ( 'OUTPUT TO GO TO TERMINAL, OFFLINE PRINTER, '
319                 || 'BOTH, OR QUIT' ) ;
320
321 TP2:      DISPLAY ( 'ENTER TERM, PRTR, BOTH, OR QUIT' ) REPLY ( DLINE);
322             DISPLAY ( ' ' ) ;
323
324             IF ( DL4 = 'TERM' ) THEN GO TO STERM ;
325             IF ( DL4 = 'PRTR' ) THEN GO TO OPRTR ;
326             IF ( DL4 = 'BOTH' ) THEN GO TO SPRTR ;
327             IF ( DL4 = 'QUIT' ) THEN GO TO FEND ;
328
329             DISPLAY ( ' ' ) ;
330             DISPLAY ( 'UNABLE TO DETERMINE ENTRY TYPE - TRY AGAIN' ) ;
331             DISPLAY ( ' ' ) ;
332
333             GO TO TP2 ;
334
335 OPRTR: DISP = 2 ;
336
337 SPRTR: OPEN FILE (SYSPRINT) LINESIZE (120) PAGESIZE (60) ;
338
339 ON ENDPAGE (SYSPRINT)
340 BEGIN ;
341
342             NPAGE = NPAGE + 1 ;
343             PUT EDIT ( 'PAGE NUMBER : ', NPAGE )
344                 ( PAGE, LINE(2), X(9), A, F(4) ) ;

```

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PAGE NUMBER : 6

SOURCE CARD LISTING FOR
P1: /* GENERAL-PURPOSE PROJECT FILE PRINT - THU/24/MAR/77 */

```

345      IF ( KTYPE > 15 ) THEN GO TO SKP ;
346
347      PUT EDIT ( 'LISTING OF PROJECT FILE CONTENTS',
348                T2, ( )
349                ( SKIP(2), X(9), A, SKIP(1), A, SKIP(1), A ) ) ;
350
351      IF ( KTYPE <= 10 ) THEN GO TO SKP ;
352      IF ( KTYPE > 10 ) & ( KTYPE < 14 ) THEN GO TO SKP ;
353
354      PJT SKIP (1) ;
355      IF ( NTYPE = 3 ) THEN GO TO TASKTTL ;
356      IF ( NTYPE = 2 ) THEN GO TO VEHTTL ;
357
358 CRSTTL: PJT EDIT (
359 '*** THE FOLLOWING IS EXTRACT DATA FOR COURSES ***',
360 'RECORD',
361 'NUM ORIGIN CIN CDP COURSE TITLE',
362 '-----',
363 ' ',
364 ' ',
365 ( X(9), A,
366   SKIP(2), X(4), A, 3 ( SKIP(1), A ) ) ;
367 GO TO SKP ;
368
369 VEHTTL: PUT EDIT (
370 '*** THE FOLLOWING IS EXTRACT DATA FOR VEHICLES ***',
371 'RECORD',
372 'NUM ORIGIN STOCK NUMBER DESIGNATOR',
373 '-----',
374 ' ',
375 ' ',
376 ( X(9), A,
377   SKIP(2), X(4), A, COL(35), A, 3 ( SKIP(1), A ) ) ;
378 GO TO SKP ;
379
380 TASKTTL: PJT EDIT (
381 '*** THE FOLLOWING IS EXTRACT DATA FOR TASKS ***',
382 'RECORD',
383 'NUM ORIGIN RATING RANK JOBTASK',
384 '-----',
385 ' ',
386 ' ',
387 ( X(9), A,
388   SKIP(2), X(4), A, 3 ( SKIP(1), A ) ) ;
389
390 SKP: PUT SKIP (1) ;
391 END ;
392
393 GO TO STARTP ;
394
395 STERM: PTR = 2 ;
396
397 STARTP: IF ( DISP = 2 ) THEN GO TO PROCESS ;
398
399 ON CONDITION (NEWDP)
400 BEGIN ;
401
402 IF ( LT >= 66 ) THEN GO TO LPB ;
403
404 IF ( LT < 61 ) THEN LT = 61 ;
405 LPA: DO L = LT TO 66 ;
406     DISPLAY ( ' ', ) ;
407     END LPA ;
408
409 LPB: DISPLAY ( ' ', ) ;
410
411 DPAGE = DPAGE + 1 ;
412 DDPGE = DPAGE ;
413 DISPLAY ( DTTL ) ;
414 DISPLAY ( ' ', ) ;
415 LT = 3 ;

```

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PAGE NUMBER : 7

SOURCE CARD LISTING FOR
P1: /* GENERAL-PURPOSE PROJECT FILE PRINT - THU/24/MAR/77 */

```

414 IF ( KTYPE > 15 ) THEN GO TO NEWEND ;
415
416 DISPLAY ( 'LISTING OF PROJECT FILE CONTENTS' ) ;
417 DISPLAY ( T2 ) ; DISPLAY ( ' ' ) ;
418 LT = LT + 3 ;
419
420 IF ( KTYPE <= 10 ) THEN GO TO NEWEND ;
421 IF ( KTYPE > 10 ) & ( KTYPE < 14 ) THEN GO TO NEWEND ;
422
423 IF ( NTYPE = 3 ) THEN DO ;
424 DISPLAY ( 'THE FOLLOWING IS ROE RESULT DATA FOR TASKS' ) ;
425 DISPLAY ( ' NUM ORIGIN RATING RANK JOBTASK' ) ;
426 DISPLAY ( '-----' ) ;
427 GO TO DSKIP ;
428 END ;
429
430 IF ( NTYPE = 2 ) THEN DO ;
431 DISPLAY ( 'THE FOLLOWING IS ROE RESULT DATA FOR VEHICLES' ) ;
432 DISPLAY ( ' NUM ORIGIN STOCK NUMBER DESIGNATOR' ) ;
433 DISPLAY ( '-----' ) ;
434 GO TO DSKIP ;
435 END ;
436
437 DISPLAY ( 'THE FOLLOWING IS ROE RESULT DATA FOR COURSES' ) ;
438 DISPLAY ( ' NUM ORIGIN CIN CDP COURSE TITLE' ) ;
439 DISPLAY ( '-----' ) ;
440
441 DSKIP: DISPLAY ( ' ' ) ;
442 LT = LT + 4 ;
443 NEWEND: END ;
444
445 /*****/
446
447 /* NOW, NEW FILE IS SETUP */
448
449 PROCESS:
450 NFIRST = 0 ;
451 NR = 0 ;
452 FLAGS (KTYPE) = '1'B ;
453 T2TTL = TTLS (KTYPE) ;
454
455 OPEN FILE (PROJ) RECORD INPUT TITLE ( DTYPE(KTYPE) ) ;
456 ON ENDFILE (PROJ) GO TO TALLY ;
457
458 IF ( PTR = 1 ) THEN SIGNAL ENDPAGE (SYSPRINT) ;
459
460 IF ( DISP = 2 ) THEN GO TO DOIT ;
461 SIGNAL CONDITION (NEWDP) ;
462
463 DOIT: IF ( KTYPE > 10 )
464 THEN GO TO WAY ( KTYPE ) ;
465
466 /*****/
467
468 /* IF CARD-IMAGE PRINTING ALONE REQUIRED, IT IS DONE HERE */
469
470 RRR1: READ FILE (PROJ) INTO (CARD) ;
471 NR = NR + 1 ;
472
473 IF ( PTR = 1 ) THEN PUT LIST (CARD) SKIP (1) ;
474
475 IF ( DISP = 2 ) THEN GO TO RRR1 ;
476 LT = LT + 1 ;
477 IF ( LT > MAXLTB ) THEN SIGNAL CONDITION (NEWDP) ;
478 DISPLAY ( CARD ) ;
479
480 GO TO RRR1 ;
481
482 /*****/

```


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SOURCE CARD LISTING FOR
P1: /* GENERAL-PURPOSE PROJECT FILE PRINT - THU/24/MAR/77 */

/* IN THIS SECTION, FILETYPES REC, REV, REJ ARE PROCESSED ;
FIRST, FILETYPE REC IS SETUP */

WAY(11): DO J = 1 TO 4 ;
READ FILE (DIND) INTO (CARD) KEY (J) ;
COVER (J) = CARD ;
END ;

GO TO RECVJ ;

/* NOW, SETUP FILE (REV) PROCESSING */

WAY(12): DO J = 5 TO 8 ;
READ FILE (DIND) INTO (CARD) KEY (J) ;
COVER (J-4) = CARD ;
END ;

GO TO RECVJ ;

/* FINALLY, SETUP OF FILE (REJ) ENSUETH */

WAY(13): DO J = 9 TO 12 ;
READ FILE (DIND) INTO (CARD) KEY (J) ;
COVER (J - 8) = CARD ;
END ;

/* HERE, ONE OF THE FILES (REC), (REV), (REJ) IS PRINTED */

RECVJ: READ FILE (PROJ) INTO (CARD) ;
NR = NR + 1 ;
IF (C110 = ' ') THEN GO TO RECVJ ;
GET STRING (C110) EDIT (N) (F(10)) ;
J = ABS (N) ;
IF (PDESC(J) = 0) THEN GO TO FIXSR ;
READ FILE (DIND) INTO (CARD) KEY (PDESC(J)) ;
PUT STRING (DLINE) EDIT (N, SUBSTR(CARD, 3, 70))
(X(5), F(4), X(1), A) ;
IF (PTR = 1) THEN PUT LIST (DLINE) SKIP (2) ;
IF (DISP = 2) THEN GO TO RECVJ ;
IF (LT > MAXLTB) THEN SIGNAL CONDITION (NEWDP) ;
DISPLAY (' ') ; DISPLAY (DLINE) ;
LT = LT + 2 ;

GO TO RECVJ ;

FIXSR: DLINE = '*** ILLEGAL DESCRIPTOR - ' || C110 ||
'- DETECTED IN ' || NAME4 || ' FILE ***' ;

DISPLAY (' ') ;
DISPLAY ((10) ' ' || DLINE) ;
DISPLAY (' ') ;
LT = LT + 3 ;

PUT LIST (DLINE) SKIP (2) ;

GO TO RECVJ ;

/*****/

/* HERE, EOF SENSED WHILE PROCESSING INPUT FILE */

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SOURCE CARD LISTING FOR
P1: /* GENERAL-PURPOSE PROJECT FILE PRINT - THU/24/MAR/77 */

```

552 TALLY: CLOSE FILE (PROJ) ;
553
554 PUT STRING (DLINE) EDIT ( 'A TOTAL OF ', NR,
555 ' RECORDS ARE PRESENT' ) ( X(10), A, F(4), A ) ;
556 CARD = (10) ' || WITHIN THIS FILE' ;
557
558 IF ( PTR = 1 ) THEN PUT EDIT
559 ( DLINE, CARD ) ( SKIP(3), A, SKIP(1), A ) ;
560
561 IF ( DISP = 2 ) THEN
562 DO ;
563 DISPLAY ( ' ' ) ;
564 DISPLAY ( 'NOW LISTING FILETYPE = ' || DTYPE (KTYPE) ) ;
565 GO TO TALLY2 ;
566 END ;
567
568 DISPLAY ( ' ' ) ;
569 TALLY2: DISPLAY ( DLINE ) ;
570 DISPLAY ( CARD ) ; DISPLAY ( ' ' ) ;
571
572 GO TO REROUTE ;
573
574 /*****/
575
576 /* HERE, WHEN PROCECESSING ALL PROJECT FILES ; THE ORDER OF
577 PROCESSING WILL BE THAT OF VECTOR (DTYPE(21)) */
578
579 FINDALL: REROUTE = TALLYALL ;
580 KALL, KTYPE, KDEV = 1 ;
581
582 NEXALL: NAME4 = DTYPE (KTYPE) ;
583
584 GO TO FINDF ;
585
586 TALLYALL: IF ( KTYPE >= 21 ) THEN GO TO PROMPTA ;
587
588 KTYPE = KTYPE + 1 ;
589 KALL = KALL + 1 ;
590
591 GO TO NEXALL ;
592
593 /*****/
594
595 /* HEREIN, IS THE PROCESSING OF FILETYPE = REE / RESU */
596
597 WAY(14): WAY(15):
598 RD1: READ FILE (PROJ) INTO (S16) ;
599 NR = NR + 1 ;
600
601 IF ( RTYP = NTYPE ) THEN GO TO STEP1 ;
602
603 NTYPE = RTYP ;
604 IF ( PTR = 1 ) & ( NFIRST > 0 )
605 THEN SIGNAL ENDPAGE (SYSPRINT) ;
606 IF ( DISP = 1 ) & ( NFIRST > 0 )
607 THEN SIGNAL CONDITION (NEWDP) ;
608 NFIRST = NFIRST + 1 ;
609
610 STEP1: GO TO V1 (NTYPE) ;
611
612 /* HERE, A COURSE RECORD IS PROCESSED */
613
614 V1(1): NC = NC + 1 ;
615 NLINE = 1 ;
616
617 DLINE = ' ' ;
618 PUT STRING (DLINE) EDIT ( NR, RESCIN, RESCDP )
619 ( P'Z,ZZ9', X(12), A, X(2), A ) ;
620

```

TAEG REPORT NO. 40

PAGE NUMBER : 10

SOURCE CARD LISTING FOR
P1: /* GENERAL-PURPOSE PROJECT FILE PRINT - THU/24/MAR/77 */

```

621 STP1: IF ( RSTAT = 1 ) THEN DLINE8 = 'ORIGINAL' ;
622 ELSE IF ( RSTAT = 2 ) THEN DLINE8 = 'ADDED' ;
623 ELSE DLINE8 = 'DELETED' ;
624
625 IF ( RESCDP = ' ' ) THEN DLINE28 = 'NONE' ;
626
627 IF ( RSTAT = 2 ) | ( RESCDP = ' ' ) THEN
628 NOCDATA: DO ;
629 NV = NV + 1 ;
630 DLINECST = NOAB ;
631 GO TO OUTLOOP ;
632 END NOCDATA ;
633
634 YECDP = RESCDP ;
635 LOOKU = STEP2 ;
636 GO TO FINDCDP ;
637
638 STEP2: IF ( CDPREC = 0 ) THEN
639 LP1: DO ;
640 NDF = NDF + 1 ;
641 DLINECST = NODIR ;
642 GO TO OUTLOOP ;
643 END LP1 ;
644
645 READ FILE (COURSE) INTO (ACRS) KEY (CDPREC) ;
646
647 DLINECST = CST ;
648
649 GO TO OUTLOOP ;
650
651 /* HERE, VEHICLE TYPE RECORDS ARE PROCESSED */
652
653 V1(2): NV = NV + 1 ;
654 NLINE = 1 ;
655
656 DLINE = ' ' ;
657 PUT STRING (DLINE) EDIT ( NR, RESID )
658 ( 'P'Z,ZZ9', X(12), A(13) ) ;
659
660 STP2: IF ( RSTAT = 1 ) THEN DLINE8 = 'ORIGINAL' ;
661 ELSE IF ( RSTAT = 2 ) THEN DLINE8 = 'ADDED' ;
662 ELSE DLINE8 = 'DELETED' ;
663
664 IF ( RSTAT = 2 ) THEN
665 NOVDATA: DO ;
666 NV = NV + 1 ;
667 DLINE33 = NOAB ;
668 GO TO OUTLOOP ;
669 END NOVDATA ;
670
671 YEVEH = RESID ;
672 LOOKU = STEP3 ;
673 GO TO FINDVEH ;
674
675 STEP3: IF ( VEHREC = 0 ) THEN
676 LP2: DO ;
677 NDF = NDF + 1 ;
678 DLINE36 = NODIR ;
679 GO TO OUTLOOP ;
680 END LP2 ;
681
682 READ FILE (VEHS) INTO (AVEHICLES) KEY (VEHREC) ;
683
684 DLINE33 = DEVDESIG ;
685 CARD = ' ' ;
686 CARD7 = DEVNAME ;
687 NLINE = 2 ;
688
689 GO TO OUTLOOP ;

```

PAGE NUMBER : 11

SOURCE CARD LISTING FOR
P1: /* GENERAL-PURPOSE PROJECT FILE PRINT - THU/24/MAR/77 */

/* NOW, PROCESS A TASK RECORD HERE */

```

690
691
692
693 V1(3): NJ = NJ + 1 ;
694       NLINE = 1 ;
695
696       DLINE = ' ' ;
697       PUT STRING (DLINE) EDIT ( NR, RATE, RANK, REST.JOBTASK )
698           ( P'Z,ZZ9', X(12), A, X(4), A, X(3), A ) ;
699
700       IF ( RSTAT = 1 ) THEN DLINE8 = 'ORIGINAL' ;
701       ELSE IF ( RSTAT = 2 ) THEN DLINE8 = 'ADDED' ;
702       ELSE DLINE8 = 'DELETED' ;
703

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704 STP5: IF ( RSTAT = 2 ) THEN
705 NOTDATA: DO ;
706           NN = NN + 1 ;
707           DLINE40 = NOAB ;
708           GO TO OUTLOOP ;
709       END NOTDATA ;

```

```

710
711 YETASK = RESID ;
712 LOOKU = STEP4 ;
713 GO TO FINDTASK ;
714

```

```

715 STEP4: IF ( TASKREC = 0 ) THEN
716 LP3: DO ;
717       NDF = NDF + 1 ;
718       DLINE40 = NODIR ;
719       GO TO OUTLOOP ;
720   END LP3 ;

```

```

721 READ FILE (TASKS) INTO (ATASKS) KEY (TASKREC) ;
722

```

```

723 CARD = ' ' ;
724 CARD7 = TASKTTL ;
725 NLINE = 2 ;

```

```

726
727 GO TO OUTLOOP ;
728

```

/* HERE IS THE PRINTED LINE OUTPUT SEQUENCE */

```

729
730 OUTLOOP: IF ( PTR = 1 )
731 THEN PUT LIST (DLINE) SKIP (2) ;
732
733 IF ( PTR = 1 ) & ( NLINE = 2 )
734 THEN PUT LIST ( CARD ) SKIP (1) ;
735
736 IF ( DISP = 2 ) THEN GO TO RD1 ;
737
738 IF ( LT > MAXLTB ) THEN SIGNAL CONDITION (NEWDP) ;
739
740 DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;
741 LT = LT + 2 ;
742
743 IF ( NLINE = 2 ) THEN GO TO RD1 ;
744 DISPLAY ( CARD ) ;
745 LT = LT + 1 ;
746
747 GO TO RD1 ;
748

```

/*****

```

750
751 DECLARE ( FLCIN, FLCDP, FLVEH, FLTASK ) BIT (1) STATIC,
752 YECIN CHAR (8) STATIC,
753 YECOP CHAR (4) STATIC,
754 ( YETASK, YEVEH ) CHAR (13) STATIC,
755 ( CINREC, CDPREC, VEHREC, TASKREC, VEHMAX, TASKMAX,
756 CINMAX, CDPMAX ) FIXED BIN STATIC,

```


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PAGE NUMBER : 12

SOURCE CARD LISTING FOR
P1: /* GENERAL-PURPOSE PROJECT FILE PRINT - THU/24/MAR/77 */

```

759      LOOKU      LABEL ;
760
761      /* CIN DIRECTORY LOOKUP SUBROUTINE
762
763          ENTRY : DESIRED CIN IN YECIN
764          EXIT  : CINREC = 0 (NO FIND) OR REG NUMBER
765          RETURN VECTOR IS LOOKU      */
766
767      FINDCIN: IF ( FLCIN ) THEN GO TO CIN2 ;
768
769          CINMAX = REFS (2) ;
770          FLCIN = '1'B ;
771
772      CINLOAD: DO J = 1 TO 4 ;
773                PLGIN = ADDR ( COVCIN (J) ) ;
774                READ FILE (DCIN) INTO (LOADCIN) ;
775                END CINLOAD ;
776
777      CIN2: DO I = 1 TO CINMAX ;
778             IF ( YECIN ^= CHCIN(I) ) THEN GO TO ECIN2 ;
779             CINREC = CINPTR (I) ;
780             GO TO LOOKU ;
781
782      ECIN2: END CIN2 ;
783
784      NFCIN: CINREC = 0 ;
785             GO TO LOOKU ;
786
787      /* CDP DIRECTORY LOOKUP SUBROUTINE
788          ENTRY : DESIRED CDP IN YECDP
789          EXIT  : CDPREC = 0 (NO FIND), OR REC NUMBER
790          RETURN VECTOR IS LOOKU      */
791
792      FINDCDP: IF ( FLCDP ) THEN GO TO CDP2 ;
793
794          CDPMAX = REFS (3) ;
795          FLCDP = '1'B ;
796
797      CDPLOAD: DO J = 1 TO 4 ;
798                PLCDP = ADDR ( COVCDP (J) ) ;
799                READ FILE (DCDP) INTO (LOADCDP) ;
800                END CDPLOAD ;
801
802      CDP2: DO I = 1 TO CDPMAX ;
803             IF ( YECDP ^= CHCDP(I) ) THEN GO TO ECDP2 ;
804             CDPREC = CDPCTR(I) ;
805             GO TO LOOKU ;
806
807      ECDP2: END CDP2 ;
808
809      NFCDP: CDPREC = 0 ;
810             GO TO LOOKU ;
811
812      /* VEHICLE ID LOOKUP SUBROUTINE
813          ENTRY : DESIRED VEH ID IN YEVEH
814          EXIT  : VEHREC = 0 (NO FIND), OR REC NUMBER
815          RETURN VECTOR IS LOOKU      */
816
817      FINDVEH: IF ( FLVEH ) THEN GO TO VEH2 ;
818
819          VEHMAX = REFS (8) ;
820          FLVEH = '1'B ;
821
822      VEHLOAD: DO J = 1 TO 4 ;
823                PLVEH = ADDR ( COVVEH (J) ) ;
824                READ FILE (DVEH) INTO (LOADVEH) ;
825                END VEHLOAD ;
826
827      VEH2: DO I = 1 TO VEHMAX ;
828             IF ( YEVEH ^= CHVEH(I) ) THEN GO TO EVEH2 ;
829             VEHREC = VEHCTR (I) ;

```

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PAGE NUMBER : 13

SOURCE CARD LISTING FOR
P1: /* GENERAL-PURPOSE PROJECT FILE PRINT - THU/24/MAR/77 */

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888

      GO TO LOOKU ;
EVEH2:      END VEH2 ;
NFVEH:      VEHREC = 0 ;
            GO TO LOOKU ;

      /* TASK ID DIRECTORY LOOKJP SUBROUTINE
      ENTRY : DESIRED TASK ID (13-CHAR) IN YETASK
      EXIT  : TASKREC = 0 (NO FIND) OR REC NUMBER
      RETURN VECTOR IS LOOKU      */

FINDTASK:   IF ( FLTASK ) THEN GO TO TASK2 ;
            TASKMAX = REFS (12) ;
            FLTASK = '1'B ;

TASKLOAD:   DO J = 1 TO 12 ;
            PLTASK = ADDR ( COVTASK (J) ) ;
            READ FILE (DTASK) INTO (LOADTASK) ;
            END TASKLOAD ;

TASK2:      DO I = 1 TO TASKMAX ;
            IF ( YETASK ^= CHTASK(I) ) THEN GO TO ETASK2 ;
            TASKREC = TASKPTR (I) ;
            GO TO LOOKU ;
ETASK2:      END TASK2 ;

NFTASK:      TASKREC = 0 ;
            GO TO LOOKU ;

/*****/
      /* IF GET HERE, PROGRAM IS TERRIBLE BROKE */
BUSTED:      PUT STRING (CARD) EDIT
            ( ' ** ERROR NUMBER ', NER, ' HAS OCCURED **' )
            ( A, F(2), A ) ;

            PUT LIST (CARD) SKIP (3) ;
            PUT LIST (DLINE) SKIP (2) ;

            DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;
            DISPLAY ( ' ' ) ;

/*****/
      /* HERE IS EOF WINDUP PROCESSING */
EOJ:      EOF:
FEND:      CLOSE FILE (MREF), FILE (ID), FILE (REE),
            FILE (COURSE), FILE (DCDP),
            FILE (VEHS), FILE (OVEH),
            FILE (TASKS), FILE (DTASK) ;

            IF ( PTR = 1 ) THEN CLOSE FILE (SYSPRINT) ;

            DISPLAY ( ' ' ) ; DISPLAY ( ' ' ) ;
            DISPLAY ( 'PROJECT-FILE PRINT PROGRAM IS NOW TERMINATING' ) ;
            DISPLAY ( ' ' ) ;

            END P1 ;

```

TAEG REPORT NO. 40

PAGE NUMBER : 1

SOURCE CARD LISTING FOR
P2: /* SEARCH DESIGNATORS IA EDITOR - TUE/08/FEB/77 */

```

1 P2: /* SEARCH DESIGNATORS IA EDITOR - TUE/08/FEB/77 */
2 PROC (INPARM) OPTIONS (MAIN) ;
3
4 /* REVISIONS :
5 TUE/08/FEB/77 - FIRST DEBUG VERSION AT CKF.
6
7 WED/23/FEB/77 - INTRODUCED REC, REV, REJ PROJECT FILES.
8
9 WED/02/MAR/77 - ENTERED CHECKS TO VALIDATE THE INCOMING
10 DESCRIPTORS FROM PROJECT FILES REC,
11 REV, AND REJ; EDIT PROJECT FILES IF INVALID.
12
13 MON/21/MAR/77 - MODS PRIOR TO TRANSMIT TO NCSS.
14
15 */
16 DECLARE DIND FILE RECORD DIRECT
17 KEYED ENV ( REGIONAL(1) ) ;
18
19 DECLARE ( NC, MEOP, KEOF, NRD, J, K, L, FCON, CFLAG, ND,
20 JE, KMAX, NER, KD, NTYPE, NUM, L1, L1A, N,
21 JD ) FIXED BIN STATIC,
22
23 FNME CHAR (3) STATIC,
24 ROUTE LABEL,
25 ( RD(3), SRET ) LABEL ;
26
27 DECLARE ( CARD, DLINE ) CHAR (80) STATIC,
28 C14 CHAR (4) DEF CARD POS (1),
29 C16 CHAR (6) DEF CARD POS (1),
30 C110 CHAR (10) DEF CARD,
31 C580 CHAR (75) DEF CARD POS (5),
32 C780 CHAR (74) DEF CARD POS (7),
33 C1080 CHAR (70) DEF CARD POS (11),
34
35 INPARM CHAR (100) VARYING,
36 1 POVER3 BASED (PP),
37 2 PARM CHAR (1),
38 2 PARM2 CHAR (4),
39
40 RNUMS (3,3) FIXED BIN /* MASTER INDEX REC NOS */
41 STATIC INIT ( 1, 4, 0, /* COURSES */
42 5, 8, 4, /* VEHICLES */
43 9, 12, 8 ), /* TASKS */
44
45 TYPE3 (3) CHAR (8) STATIC INIT
46 ( 'COURSES', 'VEHICLES', 'TASKS' ),
47
48 FNAMES (3) CHAR (8) STATIC INIT
49 ( 'REC', 'REV', 'REJ' ),
50
51 A80 (80) CHAR (1) BASED (PA80),
52 ( CARG, VARG, TARG ) CHAR (240) STATIC,
53 PARGS (3) POINTER,
54 WFLAGS (3) FIXED BIN STATIC,
55 TTL4 CHAR (10) STATIC ;
56
57 /*****
58
59 DECLARE 1 DINDEX STATIC, /* OVERALL DESCRIPTOR INDEX */
60 2 DSTART FIXED BIN, /* CKF.DESC.INDEX */
61 2 DEVD FIXED BIN,
62 2 NCAT FIXED BIN,
63 2 NDESC FIXED BIN,
64 2 CATEGORIES (15),
65 3 PCAT FIXED BIN,
66 3 SCAT FIXED BIN,
67 3 ECAT FIXED BIN,
68 2 PDESC (111) FIXED BIN,

```

PAGE NUMBER : 2

SOURCE CARD LISTING FOR

P2: /* SEARCH DESIGNATORS IA EDITOR - TUE/08/FEB/77 */

```

69         COVER (4)          CHAR (80) BASED (PCOV) ;
70
71 DECLARE 1 MAST             STATIC,
72           2 REFS (40)      FIXED BIN ;
73
74 DECLARE 1 TTLCARD          STATIC,          /* PROJECT TITLE DATA BASE */
75           2 PNAME          CHAR (8),        /* CKF.TITLE */
76           2 PTTL           CHAR (72),
77
78           1 SARGS           BASED (PSARG), /* ROE SEARCH ARGUMENTS */
79           2 SID             CHAR (8),        /* CKF.SEARCH.ARGS */
80           2 SSTAT          FIXED BIN,
81           2 STAB (115)     FIXED BIN ;
82
83 /*****/
84
85 START:  NC, MEJF, KEOF, NRD, NTYPE,
86         J, K = 0 ;
87         WFLAGS = 0 ;
88
89         SRET = STEP1 ;          /* SET FOR INITIAL SELECT LOOP */
90
91         PARGS (1) = ADDR (CARG) ;
92         PARGS (2) = ADDR (VARG) ;
93         PARGS (3) = ADDR (TARG) ;
94         PP = ADDR (INPARM) ;
95         PCOV = ADDR (DINDEX) ;
96         PA80 = ADDR (CARD) ;
97
98 COMMENCE: OPEN FILE (DIND) INPUT,
99            FILE (MREF) RECORD INPUT,
100            FILE (ID) RECORD INPUT,
101            FILE (SARG) RECORD OUTPUT ;
102
103         READ FILE (MREF) INTO (MAST) ;
104         KMAX = REFS (4) ;          /* MAX SS USED IN MASTER INDEX */
105
106 FINDT:  READ FILE (ID) INTO (CARD) ;
107         TTL4 = C110 ;
108
109         DISPLAY ( ' ' ) ;
110         DISPLAY ( (10) , ' ' , 'SEARCH DESCRIPTOR EDITOR RUN'
111                 ' ' , 'FOR PROJECT : ' , ' ' , TTL4 ) ;
112
113         DISPLAY ( C1080 , ' ' ) ;
114         DISPLAY ( ' ' , ' ' ) ;
115
116 /*****/
117
118 /* PROJECT FILES REC, REV, REJ TRANSFERRED TO THE SEARCH
119    ARGUMENT FILE IN THIS SECTION */
120
121         OPEN FILE (REC) RECORD UPDATE,
122            FILE (REV) RECORD UPDATE,
123            FILE (REJ) RECORD UPDATE ;
124
125         ON ENDFILE (REC) GO TO L2 ;
126         ON ENDFILE (REV) GO TO L3 ;
127         ON ENDFILE (REJ) GO TO L4 ;
128
129         ON CONVERSION GO TO FIXSR ;
130
131 /* HERE, COURSES PROCESSED FROM FILE = REC */
132
133         PSARG = ADDR (CARG) ;
134         SID = 'COURSES' ;
135         SSTAT = 0 ; STAB = 0 ;
136         ROUTE = RW1 ;
137         FNME = 'REC' ;

```


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PAGE NUMBER : 3

SOURCE CARD LISTING FOR
P2: /* SEARCH DESIGNATORS IA EDITOR - TUE/08/FEB/77 */

```

138
139
140 LOOP1:      DO J = 1 TO 4 ;
141             READ FILE (DIND) INTO (CARD) KEY ( J ) ;
142             COVER (J) = CARD ;
143             END LOOP1 ;
144
145 R1:         READ FILE (REC) INTO (CARD) ;
146             IF ( C110 = ' ' ) THEN GO TO R1 ;
147
148             GET STRING (C110) EDIT (N) ( F(10) ) ;
149             J = ABS (N) ;
150             IF ( PDESC(J) = 0 ) THEN GO TO FIXSR ;
151             SSTAT = SSTAT + 1 ;
152             STAB ( ABS(N) ) = N ;
153             GO TO R1 ;
154
155 RW1:        REWRITE FILE (REC) FROM (CARD) ;
156             GO TO R1 ;
157
158 /* HERE, VEHICLES PROCESSED FROM REV FILE */
159
160 L2:         PSARG = ADDR (VARG) ;
161             SID = 'VEHICLES' ;
162             SSTAT = 0 ; STAB = 0 ;
163             ROUTE = RW2 ;
164             FNME = 'REV' ;
165
166 LOOP2:      DO J = 5 TO 8 ;
167             READ FILE (DIND) INTO (CARD) KEY ( J ) ;
168             COVER ( J - 4 ) = CARD ;
169             END LOOP2 ;
170
171 R2:         READ FILE (REV) INTO (CARD) ;
172             IF ( C110 = ' ' ) THEN GO TO R2 ;
173
174             GET STRING (C110) EDIT (N) ( F(10) ) ;
175             J = ABS (N) ;
176             IF ( PDESC(J) = 0 ) THEN GO TO FIXSR ;
177             SSTAT = SSTAT + 1 ;
178             STAB ( ABS(N) ) = N ;
179             GO TO R2 ;
180
181 RW2:        REWRITE FILE (REV) FROM (CARD) ;
182             GO TO R2 ;
183
184 /* FINALLY, TASKS ARE PROCESSED FROM FILE = REJ */
185
186 L3:         PSARG = ADDR (TARG) ;
187             SID = 'TASKS' ;
188             SSTAT = 0 ; STAB = 0 ;
189             ROUTE = RW3 ;
190             FNME = 'REJ' ;
191
192 LOOP3:      DO J = 9 TO 12 ;
193             READ FILE (DIND) INTO (CARD) KEY ( J ) ;
194             COVER ( J - 8 ) = CARD ;
195             END LOOP3 ;
196
197 R3:         READ FILE (REJ) INTO (CARD) ;
198             IF ( C110 = ' ' ) THEN GO TO R3 ;
199
200             GET STRING (C110) EDIT (N) ( F(10) ) ;
201             J = ABS (N) ;
202             IF ( PDESC(J) = 0 ) THEN GO TO FIXSR ;
203             SSTAT = SSTAT + 1 ;
204             STAB ( ABS(N) ) = N ;
205             GO TO R3 ;
206
207 RW3:        REWRITE FILE (REJ) FROM (CARD) ;

```

PAGE NUMBER : 4

SOURCE CARD LISTING FOR
P2: /* SEARCH DESIGNATORS IA EDITOR - TUE/08/FEB/77 */

```

207      GO TO R3 ;
208
209      /* WITHIN THIS SUBROUTINE, AN INVALID DESIGNATOR (CONVERSION
210      OR RANGE) IS ELIMINATED FROM REC, REJ, REV */
211
212      FIXSR: DLINE = '** ILLEGAL DESIGNATOR -' || C110 ||
213             '- DETECTED IN ' || FNME || ' FILE **' ;
214             DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;
215
216             DLINE = ' DESIGNATOR WILL BE IGNORED AND REMOVED FROM THE '
217                   || FNME || ' FILE' ;
218             DISPLAY ( DLINE ) ;
219             DISPLAY ( ' ' ) ;
220
221             CARD = ' ' ;
222             GO TO ROUTE ;
223
224      /* HERE, FINAL SETUP, PRIOR TO ENTERING MAINLINE */
225
226      L4:   CLOSE FILE (REC), FILE (REV), FILE (REJ) ;
227
228           ON CONVERSION
229             BEGIN ;
230
231             DISPLAY ( ' ' ) ;
232             DISPLAY (
233               '** KEYBOARD ENTRY -' || SUBSTR ( CARD, K, 3 ) ||
234               '- CONTAINED ILLEGAL NUMERIC CHARACTER' ) ;
235
236             GO TO PROMPTA ;
237             END ;
238
239      /*****
240
241      /* HERE, INITIAL LOOP, AWAITING TYPE DESIGNATOR SELECT */
242
243      STEP1: DISPLAY ( ' ' ) ;
244             DISPLAY ( '** MAKE INITIAL ENTRY SELECT' ) REPLY (CARD) ;
245
246             NRD = 1 ;
247             IF ( C16 /= 'SELECT' ) THEN GO TO STEP1 ;
248
249      LP1:   DO J = 1 TO 3 ;
250             NTYPE = J ;
251             IF ( INDEX ( C780, TYPE3(J) ) > 0 ) THEN GO TO STEP2 ;
252             END LP1 ;
253
254             DISPLAY ( ' ' ) ;
255             DISPLAY ( '** SELECTION ERROR - TRY AGAIN' ) ;
256             GO TO SRET ;
257
258      /* HERE, A SELECTION HAS BEEN MADE: INDEX IS IN NTYPE */
259
260      STEP2: PSARG = PARGS ( NTYPE ) ;
261
262      LP2:   DO J = RNUMS ( NTYPE, 1 ) TO RNUMS ( NTYPE, 2 ) ;
263             READ FILE (DIND) INTO (CARD) KEY ( J ) ;
264             COVER ( J - RNUMS ( NTYPE, 3 ) ) = CARD ;
265             END LP2 ;
266
267             DISPLAY ( ' ' ) ;
268             DISPLAY ( '** ' || SID ||
269               ' SEARCH DESCRIPTORS SELECTED' ) ;
270
271             IF ( SSTAT = 0 ) THEN
272               DO ;
273               DISPLAY ( ' ' ) ;
274               DISPLAY ( '** NO DESCRIPTORS NOW ACTIVE' ) ;
275               GO TO PROMPTA ;

```

TAEG REPORT NO. 40

PAGE NUMBER : 5

SOURCE CARD LISTING FOR

P2: /* SEARCH DESIGNATORS IA EDITOR - TUE/08/FEB/77 */

END NONMSG ;

DISPLAY (' ') ;
DISPLAY (' ** ' || SSTAT ||
' DESCRIPTORS NOW SELECTED') ;

/*****/

/* CENTRAL ACTION PROMT AND REPLY DECODE FOLLOWS */

PROMPTA: DISPLAY (' ') ;
DISPLAY (' ** MAKE NEXT ACTION REQUEST') REPLY (CARD) ;

NRD = 2 ;
IF (C14 = 'ADD') THEN GO TO ADD ;
IF (C16 = 'PRINT') THEN GO TO PRINT ;
IF (C16 = 'DELETE') THEN GO TO DELETE ;
IF (C16 = 'SELECT') THEN GO TO SELECT ;
IF (C14 = 'FILE') THEN GO TO FILE ;
IF (C14 = 'QUIT') THEN GO TO QUIT ;

DISPLAY (' ') ;
DISPLAY (' ** UNIDENTIFIED ACTION REQUEST - TRY AGAIN') ;
GO TO PROMPTA ;

/*****/

/* HERE IS PROCESSING FOR DELETE OPTION
ENTRIES ARE - DELETE (BLANK) - MEANS GET RID OF ALL
DESIGNATORS OF SELECTED TYPE.
- DELETE N - MEANS DELETE ONLY DESIGNATOR
NUMBERED (N).
*/

DELETE: IF (C780 = ' ') THEN
DELALL: DO ; /* BLANK DELETE SERVICED HERE */
WFLAGS(NTYPE) = 1 ;
SSTAT = 0 ; STAB = 0 ;

DISPLAY (' ') ;
DISPLAY (' ** ALL ' || SID ||
' SEARCH DESIGNATORS DELETED') ;

GO TO PROMPTA ;
END DELALL ;

LP3: DO J = 8 TO 77 ; /* LOOK FOR WHERE NUMBER STARTS */
K = J ;
IF (A80(J) = ' ') THEN GO TO STEP3 ;
END LP3 ;

STEP3: FCON = 1 ;
GET STRING (SUBSTR(CARD,K,4)) EDIT (NUM) (F(4)) ;
N = ABS (NUM) ;

IF (N > 100) | (N = 0) | (PDESC(N) = 0) THEN

BUMD: DO ;
DISPLAY (' ') ;
DISPLAY (' ** ' || NUM ||
' IS NOT A LEGAL DESCRIPTOR FOR ' ||
SID || ' TYPE') ;
GO TO PROMPTA ;
END BUMD ;

IF (STAB(N) = 0) THEN GO TO STEP12 ;

PUT STRING (OLINE) EDIT (' ** DESIGNATOR NUMBER ',

PAGE NUMBER : 6

SOURCE CARD LISTING FOR

P2: /* SEARCH DESIGNATORS IA EDITOR - TUE/08/FEB/77 */

```

345      N, ' HAS NOT BEEN SELECTED; IT CANNOT BE DELETED' )
346      ( A, F(3), A ) ;
347      DISPLAY ( DLINE ) ;
348
349      GO TO PROMPTA ;
350
351  STEP12: SSTAT = SSTAT - 1 ;
352          STAB (N) = 0 ;
353          WFLAGS(NTYPE) = 1 ;
354
355          DISPLAY ( '** ' || SID || ' DESIGNATOR NUMBER' ||
356                  NUM || ' HAS BEEN DELETED' ) ;
357
358          GO TO PROMPTA ;
359
360  /*****
361  /* PRINT OPTION SERVICED IN THIS SECTION */
362
363  PRINT:  ND = 0 ;          /* STAB SS */
364          CFLAG = 0 ;      /* CATEGORY PRINT FLAG; 0 MEANS DO IT */
365          NC = 1 ;          /* CATEGORIES SS */
366
367  STEP4:  IF ( ND >= 100 ) THEN GO TO PROMPTA ;
368
369          ND = ND + 1 ;
370          IF ( STAB(ND) = 0 ) THEN GO TO STEP4 ;
371
372          JD = STAB (ND) ;   /* FOUND A NON-0 DESIGNATOR */
373          KD = PDESC (ND) ; /* PTR TO DESCRIPTOR CARD */
374
375          IF ( KD <= KMAX ) THEN GO TO STEPS5 ;
376
377  ER1:    NER = 1 ;
378  ER1A:   PJT STRING (DLINE) DATA ( ND, JD, KD, KMAX ) ;
379          GO TO BUSTED ;
380
381  STEPS5: IF ( ND >= SCAT(NC) ) THEN GO TO STEP7 ;
382
383  STEP6:  NC = NC + 1 ;
384          CFLAG = 0 ;
385          IF ( NC <= 15 ) THEN GO TO STEPS5 ;
386
387  ER2:    NER = 2 ;
388          GO TO ER1A ;
389
390  STEP7:  IF ( ND = SCAT(NC) ) THEN GO TO STEP8 ;
391          IF ( ND > ECAT(NC) ) THEN GO TO STEP6 ;
392
393  STEP8:  IF ( CFLAG = 1 ) THEN GO TO DETOUT ;
394
395          /* HERE, CATEGORY LINE IS OUTPUT */
396
397  CATOUT: READ FILE (DIND) INTO (DLINE) KEY ( PCAT(NC) ) ;
398          CFLAG = 1 ;
399          DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;
400
401          /* NOW, DETAIL LINE IS OUTPUT */
402
403  DETOUT: READ FILE (DIND) INTO (DLINE) KEY ( KD ) ;
404          IF ( JD < 0 ) THEN DLINE = '-' || DLINE ;
405          DISPLAY ( DLINE ) ;
406
407          GO TO STEP4 ;
408
409  /*****
410  /* ADD OPTION SETUP HERE */
411
412  ADD:    DO J = 5 TO 77 ;
413          K = J ;
          IF ( A80(J) = ' ' ) THEN GO TO STEP9 ;

```


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SOURCE CARD LISTING FOR
P2: /* SEARCH DESIGNATORS IA EDITOR - TUE/08/FEB/77 */

```

414      END ADD ;
415
416 STEP9: FCON = 2 ;
417      GET STRING ( SUBSTR(CARD,K,4) ) EDIT (NUM) ( F(4) ) ;
418
419      N = ABS (NUM) ;
420
421      J = PDESC (N) ;
422
423      IF ( N = 0 ) | ( N > 100 ) | ( J = 0 )
424          THEN GO TO BUMD ;
425
426      IF ( J <= KMAX ) THEN GO TO STEP10 ;
427
428 ER3:   NER = 3 ;
429      JE = SSTAT ;
430      PUT STRING (DLINE) DATA ( NUM, J, JE, N ) ;
431          GO TO BUSTED ;
432
433 STEP10: IF ( STAB(N) = 0 ) THEN GO TO STEP13 ;
434          STAB (N) = NUM ;
435          GO TO STEP14 ;
436
437 STEP13: STAB (N) = NUM ;
438          SSTAT = SSTAT + 1 ;
439
440 STEP14: WFLAGS(NTYPE) = 1 ;
441
442      READ FILE (DIND) INTO (DLINE) KEY (J) ;
443
444      IF ( NUM < 0 ) THEN DLINE = '-' || DLINE ;
445
446      DISPLAY ( ' ' ) ;
447      DISPLAY ( '*** ADDED DESIGNATOR = ' || DLINE ) ;
448      DISPLAY ( '*** TOTAL DESIGNATORS SELECTED ARE : '
449              || SSTAT ) ;
450
451      GO TO PROMPTA ;
452
453 /*****
454      /* SELECT OPTION IMPLEMENTED IN THIS SECTION */
455
456 SELECT: GO TO LP1 ;
457
458 /*****
459      /* FILE OPTION IMPLEMENTED HERE */
460
461      /* UPDATED ARRAYS WRITTEN BACK OUT TO REC, REV, REJ PLUS
462      SEARCH ARGUMENT FILE */
463
464 FILE:   DO J = 1 TO 3 ;
465          PSARG = PARGS (J) ;
466
467          K = J - 1 ;
468          WRITE FILE (SARG) FROM (SARGS) ;
469
470          IF ( WFLAGS(J) > 0 ) THEN DO ;
471              DISPLAY ( ' ' ) ;
472              DISPLAY ( '*** MODIFIED ' || SID ||
473                      ' DESIGNATORS HAVE BEEN SAVED' ) ; END ;
474
475          IF ( WFLAGS(J) > 0 ) THEN
476              DO ;
477
478              OPEN FILE (PROJ) RECORD OUTPUT
479                  TITLE ( FAMES(J) ) ;
480
481              LI = SSTAT ;
482              DO L = 1 TO 100 ;

```

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SOURCE CARD LISTING FOR
P2: /* SEARCH DESIGNATORS IA EDITOR - TUE/08/FEB/77 */

```

483          IF ( STAB(L) = 0 ) THEN GO TO LP6END ;
484          CARD = ' ' ;
485          PUT STRING (CARD) EDIT
486              ( STAB(L) ) ( F(4) ) ;
487
488          WRITE FILE (PROJ) FROM (CARD) ;
489
490          SSTAT = SSTAT - 1 ;
491          END LP6 ;
492 LP6END:
493
494          LIA = SSTAT ;
495          IF ( SSTAT = 0 ) THEN GO TO STEP11 ;
496 ER4:
497          NER = 4 ;
498          PUT STRING (DLIN) DATA ( J, L1, LIA ) ;
499          GO TO BUSTED ;
500
501          STEP11:      CLOSE FILE (PROJ) ;
502
503          END LP5 ;
504          END FILE ;
505
506          GO TO EOJ ;
507
508          /*****
509          /* THIS IS THE ERROR PROCESSOR */
510
511          BUSTED: PUT STRING (DLIN) EDIT
512              ( '** ERROR NUMBER ', NER, ' HAS OCCURED **' )
513              ( A, F(2), A ) ;
514          DISPLAY ( ' ' ) ; DISPLAY ( DLIN ) ;
515
516          GO TO PROMPTA ;
517
518          /*****
519          /* THIS IS THE BITTER ENDE */
520
521          RD(1): RD(2): RD(3):
522          QUIT:  DISPLAY ( ' ' ) ;
523              DISPLAY ( 'SEARCH DESIGNATOR EDITOR IS NOW TERMINATING' ) ;
524
525          LP4:      DO J = 1 TO 3 ;
526                  IF ( WFLAGS(J) = 0 ) THEN GO TO LP4END ;
527
528                  DISPLAY ( ' ' ) ;
529                  DISPLAY (
530                      '** TYPE = ' || TYPE3(J) || ' WAS MODIFIED, BUT NOT SAVED' ) ;
531
532          LP4END:  END LP4 ;
533
534          EOJ:      CLOSE FILE (DIND), FILE (MREF), FILE (TTL),
535                  FILE (SARG) ;
536
537          END P2 ;
538

```

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SOURCE CARD LISTING FOR

P3: /* RANGE-OF-EFFECTS (ROE) SEARCH MODULE - WED/02/MAR/77 */

P3: /* RANGE-OF-EFFECTS (ROE) SEARCH MODULE - WED/02/MAR/77 */
PROC OPTIONS (MAIN) ;

/* REVISIONS :
WED/02/MAR/77 - VERYFIRST EDITION.
SAT/05/MAR/77 - FINAL (HOPEFULLY) DEBUG EFFORTS.
SUN/20/MAR/77 - MODS PRIOR TO TRANSMIT TO NCSS.

DECLARE (DIND, COURSE, VEH,
TASKS) FILE RECORD DIRECT KEYED ENV (REGIONAL (1)),

T1 CHAR (38) STATIC INIT (
'RANGE-OF-EFFECTS SEARCH FOR PROJECT : '),

MAXCSS (3) FIXED BIN STATIC
INIT (2, 8, 12),

MAXRSS (3) FIXED BIN STATIC
INIT (1, 7, 11),

(AFIRST, NR, SAVEK, HIT, NOUT, BOT, TOP,
J, J1, J2, K, K1, K2, L, MAXD, MAXR, N,
NER, NNR, NTYPE, NNF, MAXD2, KSAVE,
NC, NF) FIXED BIN STATIC,

(CARD, DLINE) CHAR (80) STATIC,
C110 CHAR (10) DEF CARD,
C1180 CHAR (70) DEF CARD POS (11),
CRSCIN CHAR (8) DEF CARD POS (5),
CRSCDP CHAR (4) DEF CARD,

ID8 CHAR (8) STATIC,
V1 (3) LABEL ;

DECLARE 1 RESULT STATIC, /* ROE SEARCH RESULTS RECORD */
2 RTYP PICTURE '9', /* 1 = CRS, 2 = VEH, 3 = JOB */
2 RSTAT PICTURE '9', /* 1 = ORIGINAL SEARCH,
2 = ADDED, 3 = DELETED */
2 RDSTAT PICTURE '9', /* 1 = ABBR DATA FOUND,
2 = NO DATA AVAIL */
2 RESID CHAR (13), /* ENTITY IDENTIFIER */
1 RESID2 BASED (PRID), /* OVERLAY FOR COURSE CIN/CDP */
2 RESCIN CHAR (8),
2 RESCDP CHAR (4),

DNAMES (3) CHAR (8) STATIC INIT
('DESC', 'VDESC', 'TDESC'),

CHAR13 CHAR (13) STATIC,
VJ13 CHAR (13) BASED (P13) ;

DECLARE 1 AND STATIC, /* SEARCH ARRAY FOR ANDED- */
2 NAND FIXED BIN, /* DESCRIPTORS BETWEEN CATS */
2 TAND (100) FIXED BIN,
2 CAT (100) FIXED BIN,

1 OR (15) STATIC, /* SEARCH ARRAY FOR ORED- */
2 NOR FIXED BIN, /* DESCRIPTORS WITHIN CATS */
2 NCAT FIXED BIN,
2 TOR (15) FIXED BIN ;

DECLARE 1 TTLCARD STATIC, /* PROJECT TITLE DATA BASE */
2 PNAME CHAR (10), /* CKF.ID */
2 PTTL CHAR (70),

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SOURCE CARD LISTING FOR
P3: /* RANGE-OF-EFFECTS (ROE) SEARCH MODULE - WED/02/MAR/77 */

```

69      1 SARGS          STATIC,          /* ROE SEARCH ARGUMENTS */
70      2 SID            CHAR (8),        /* CKF.SEARCH.ARGS */
71      2 SSTAT          FIXED BIN,
72      2 STAB (115)     FIXED BIN,
73
74      RNUMS (3,3)      FIXED BIN        /* MASTER INDEX REC NOS */
75      STATIC INIT ( 1, 4, 0,          /* COURSES */
76                      5, 8, 4,        /* VEHICLES */
77                      9, 12, 8 );     /* TASKS */
78
79      /*****
80
81      DECLARE 1 CINDEX  STATIC,          /* COURSE DESCRIPTORS */
82      2 CINDS          CHAR (8),        /* CKF.CRS.DESC */
83      2 FILL           CHAR (5),
84      2 DTAB (100)     FIXED BIN ;
85
86      DECLARE 1 CINDER (304) STATIC,      /* CRS CIN DIRECTORY */
87      2 CHCIN          CHAR (8),        /* CKF.CRS.DIRCIN */
88      2 CINPTR         FIXED BIN,
89
90      LOADCIN          CHAR (760) BASED (PLCIN),
91      COVCIN (4)       CHAR (760) BASED (PTCIN) ;
92
93      DECLARE 1 DINDEX  STATIC,          /* OVERALL DESCRIPTOR INDEX */
94      2 DSTART         FIXED BIN,        /* CKF.DESC.INDEX */
95      2 DEVD           FIXED BIN,
96      2 NCAT           FIXED BIN,
97      2 NDESC          FIXED BIN,
98      2 CATEGORIES     (15),
99      3 PCAT           FIXED BIN,
100     3 SCAT           FIXED BIN,
101     3 ECAT           FIXED BIN,
102     2 PDESC (111)    FIXED BIN,
103
104     COVER (4)        CHAR (80) BASED (PCOV) ;
105
106     DECLARE 1 MAST     STATIC,
107     2 REFS (40)       FIXED BIN ;
108
109     DECLARE 1 VEHDESC  STATIC,          /* VEH DESCRIPTOR FILE */
110     2 VEIDS           CHAR (13),        /* CKF.VEH.DESC */
111     2 VTAB (100)     FIXED BIN ;
112
113     DECLARE 1 VEHDIR (200) STATIC,      /* VEHICLE DIRECTORY */
114     2 CHVEH          CHAR (13),        /* CKF.VEH.DIR */
115     2 VEHPTX         FIXED BIN,
116
117     COVVEH (4)       CHAR (750) BASED (PTVEH),
118     LOADVEH          CHAR (750) BASED (PLVEH) ;
119
120     DECLARE 1 TASKDESC STATIC,          /* TASK DESCRIPTOR FILE */
121     2 TASKDS         CHAR (13),        /* CKF.TASK.DESC */
122     2 TTAB (100)     FIXED BIN ;
123
124     DECLARE 1 TASKDIR (1200) STATIC,    /* JOBTASK FILE DIRECTORY */
125     2 CHTASK         CHAR (13),        /* CKF.TASKS.DIR */
126     2 TASKPTR        FIXED BIN,
127
128     COVTASK (12)     CHAR (1500) BASED (PTTASK),
129     LOADTASK         CHAR (1500) BASED (PLTASK) ;
130
131     /*****
132
133     COMMENCE:
134     PRID = ADDR (RESID) ;
135     P13 = ADDR (CINDS) ;
136     PTCIN = ADDR (CINDER) ;
137     PCOV = ADDR (DINDEX) ;

```


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SOURCE CARD LISTING FOR
P3: /* RANGE-OF-EFFECTS (ROE) SEARCH MODULE - WED/02/MAR/77 */

```

138      PIVEH = ADDR (VEHDIR) ;
139      PTTASK = ADDR (TASKDIR) ;
140
141      OPEN FILE (DIND) INPUT,
142             FILE (MREF) RECORD INPUT,
143             FILE (ID) RECORD INPUT,
144
145             FILE (SARG) RECORD INPUT,
146             FILE (RESU) RECORD OUTPUT,
147
148             FILE (COURSE) INPUT,
149             FILE (DCIN) RECORD INPUT,
150             FILE (VEHS) INPUT,
151             FILE (DVEH) RECORD INPUT,
152             FILE (TASKS) INPUT,
153             FILE (DTASK) RECORD INPUT ;
154
155      /* FILE DIRECTORIES LOADED IN THIS SECTION */
156
157      CINLOAD: DO J = 1 TO 4 ;
158                PLCIN = ADDR ( COVCIN (J) ) ;
159                READ FILE (DCIN) INTO (LOADCIN) ;
160                END CINLOAD ;
161
162      VEHLOAD: DO J = 1 TO 4 ;
163                PLVEH = ADDR ( COVVEH (J) ) ;
164                READ FILE (DVEH) INTO (LOADVEH) ;
165                END VEHLOAD ;
166
167      TASKLOAD: DO J = 1 TO 12 ;
168                PLTASK = ADDR ( COVTASK (J) ) ;
169                READ FILE (DTASK) INTO (LOADTASK) ;
170                END TASKLOAD ;
171
172      /* NOW, OUTPUT THE PROJECT TITLE */
173
174      READ FILE (ID) INTO (CARD) ;
175
176      DISPLAY ( ' ' ) ;
177      DISPLAY ( 'RANGE-OF-EFFECTS (ROE) SEARCH '
178              || 'PROGRAM IS STARTING' ) ;
179
180      DLINE = T1 || C110 ;
181      DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;
182
183      DLINE = C1180 ;
184      DISPLAY ( DLINE ) ;
185
186      /* FINAL SETUP BEFORE PROGRAM MAINLINE */
187
188      NTYPE = 1 ;          /* START WITH COURSES */
189      NOUT = 0 ;          /* TOTAL # OUPUT (HIT) RECDJDS */
190      RSTAT = 1 ;        /* RESULT RECORD = ALL ORIGINAL */
191
192      READ FILE (MREF) INTO (MAST) ;
193
194      /*****
195
196      /* THIS IS START OF MAINLINE LOOP */
197
198      START: RTYP = NTYPE ;          /* RESULT RECORD TYPE */
199            NC, NF, MNF = 0 ;        /* DESCRIPTOR RECORD COUNTS */
200
201      READ FILE (SARG) INTO (SARGS) ;
202
203      PUT STRING (DLINE) EDIT ( '** NOW PROCESSING ', SID,
204              ' SEARCH - ', SSTAT, ' DESCRIPTORS SELECTED' )
205              ( A, A(8), A, F(3), A ) ;
206      DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;

```

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SOURCE CARD LISTING FOR
P3: /* RANGE-OF-EFFECTS (ROE) SEARCH MODULE - WED/02/MAR/77 */

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275

LP1: IF ( SSTAT <= 0 ) THEN
      DO ;
          DLINE = '** NO SEARCH DESCRIPTORS SPECIFIED FOR '
                || SID || ' TYPE DATA - SEARCH IS BYPASSED' ;
          DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;
          GO TO TALLY ;
      END LP1 ;

/* HERE, MASTER DESCRIPTOR INDEX IS LOADED FOR APPROPRIATE NTYPE */
LOADDIND: DO J = RNUMS(NTYPE,1) TO RNUMS(NTYPE,2) ;
          READ FILE (DIND) INTO (CARD) KEY (J) ;
          CIVER ( J - RNUMS(NTYPE,3) ) = CARD ;
          END LOADDIND ;

      NAND = 0 ;
      NOR = 0 ;

      MAXD = REFS ( MAXCSS(NTYPE) ) ; /* MAX DIRECTORY SS */
      MAXD2 = MAXD / 2 ; /* HALFWAY POINT FOR TASKS TYPE ONLY */
      MAXR = REFS ( MAXRSS(NTYPE) ) ; /* TOTAL # DATA RECS */

      /*****/
      /* NOW, LOAD UP ARRAYS PRIOR TO SEARCH OF DESIGNATOR DATASET.
      FIRST, SETUP THE -OR- ARRAY FOR HANDLING DESIGNATORS
      WITHIN A SINGLE CATEGORY */

      NOR = 0 ; /* ALL COUNT FIELDS = 0 */
      L = 0 ; /* OR STRUCTURE SS */
LP2: DO J = 1 TO 15 ; /* CATEGORY SS */
      AFIRST = 0 ; /* HAVE NOT STARTED A CAT YET */
      K1 = SCAT (J) ;
      K2 = ECAT (J) ;

LP3: DO K = K1 TO K2 ; /* INDIVIDUAL CAT BOUNDS */
      IF ( STAB(K) = 0 ) THEN GO TO LP3END ;
      IF ( AFIRST .NE. 0 ) THEN GO TO STEP1 ;
      AFIRST = 1 ;
      SAVEK = STAB (K) ;
      KSAVE = K ;
      GO TO LP3END ;

STEP1: IF ( AFIRST < 0 ) THEN GO TO STEP2 ;

      L = L + 1 ;
      NOR (L) = 1 ;
      TOR (L,1) = SAVEK ;
      STAB (KSAVE) = 0 ;
      AFIRST = -1 ;
      OR.NCAT (L) = J ;

STEP2: NOR(L) = NOR(L) + 1 ;
      TOR ( L, NOR(L) ) = STAB (K) ;
      STAB (K) = 0 ;
LP3END: END LP3 ;

      END LP2 ;

/* NOW, SETUP THE -AND- STRUCTURE TO ENCOMPASS DESIGNATORS
      THAT ARE TO BE ANDED BETWEEN CATEGORIES */

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TAEK REPORT NO. 40

PAGE NUMBER : 5

SOURCE CARD LISTING FOR
P3: /* RANGE-OF-EFFECTS (ROE) SEARCH MODULE - WED/02/MAR/77 */

```

276          NAND = 0 ;                      /* AND STRUCTURE COUNTER */
277          K = 0 ;                          /* CATEGORY SS, 1 TO 15 */
278
279 LP4:      DO J = 1 TO 100 ;                /* STAB SS */
280
281          IF ( STAB(J) = 0 ) THEN GO TO LP4END ;
282
283 STEP3:    K = K + 1 ;
284          IF ( J >= SCAT(K) ) THEN GO TO STEP4 ;
285
286 ER1:      NER = 1 ;
287 ER1A:     PUT STRING (DLIN) DATA ( NAND, J, K, SCAT(K) ) ;
288          GO TO BUSTED ;
289
290 STEP4:    IF ( J > ECAT(K) ) THEN GO TO STEP6 ;
291
292          NAND = NAND + 1 ;
293          IF ( NAND <= 100 ) THEN GO TO STEP5 ;
294
295 ER2:      NER = 2 ;
296          GO TO ER1A ;
297
298 STEP5:    TAND (NAND) = STAB (J) ;
299          CAT (NAND) = K ;
300          GO TO LP4END ;
301
302 STEP6:    IF ( K < 15 ) THEN GO TO STEP3 ;
303
304 ER3:      NER = 3 ;
305          GO TO ER1A ;
306
307 LP4END:   END LP4 ;
308
309 /******
310
311 /* HERE WE ARE AT THE SEARCH - FIRST, THE SINGLE DESIGNATORS TO
312    BE ANDED TOGETHER BETWEEN CATEGORIES ARE PURSUED */
313
314 OPEN FILE (DESIGS) RECORD INPUT TITLE ( DNAME(NTYPE) ) ;
315 ON ENDFILE (DESIGS) GO TO EOFDESC ;
316 NC, NF, NNF = 0 ;
317
318 NOGO:
319 RD1:     READ FILE (DESIGS) INTO (CINDESC) ;
320          NC = NC + 1 ;
321
322          RSTAT = 1 ;                      /* ASSUME ABBR. DATA EXISTS */
323 SEARCH:  HIT = 0 ;                      /* NOGO, JUST STARTING */
324
325          IF ( NAND = 0 ) THEN GO TO SEARCHOR ;
326
327 ANDSEARCH: DO J = 1 TO NAND ;
328          N = ABS ( TAND(J) ) ;
329          IF ( TAND(J) < 0 ) THEN GO TO TESTNOT ;
330
331 TESTPOS: IF ( DTAB(N) > 0 ) THEN GO TO GOAND ;
332          GO TO ALTAND ;
333
334 TESTNOT: IF ( DTAB(N) <= 0 ) THEN GO TO GOAND ;
335          GO TO NOGO ;
336
337 ALTAND:   K1 = SCAT ( CAT(J) ) ;
338          K2 = ECAT ( CAT(J) ) ;
339 LP5:      DO K = K1 TO K2 ;
340          IF ( DTAB(K) <= 0 ) THEN GO TO NOGO ;
341          END LP5 ;
342
343 GOAND:    END ANDSEARCH ;
344

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SOURCE CARD LISTING FOR

P3: /* RANGE-OF-EFFECTS (ROE) SEARCH MODULE - WED/02/MAR/77 */

SEARCHOR: HIT = 1 ; /* HERE, MADE IT ONE WAY OR TOTHER */

/* NOW, WE TACKLE THE OR SEARCH */

IF (L > 0) /* L IS COUNT OF OR STRUCTURES */
THEN GO TO ORSEARCH ;

IF (HIT = 0) THEN GO TO NOGO ;
ELSE GO TO GO ;

ORSEARCH: DO J = 1 TO L ; /* OR-STRUCTURE SS */

K1 = NOR (J) ; /* TOT DESCS WITHIN CAT */
LP6: DO K = 1 TO K1 ;
N = TOR (J,K) ;

IF (N > 0) THEN GO TO POSTEST ;

NEGTEST: IF (DTAB(ABS(N)) <= 0) THEN GO TO ORGO ;
GO TO LP6END ;

POSTEST: IF (DTAB(N) > 0) THEN GO TO ORGO ;

LP6END: END LP6 ;

K1 = SCAT (OR.NCAT(J)) ;
K2 = ECAT (OR.NCAT(J)) ;

LP7: DO K = K1 TO K2 ;
IF (DTAB(K) <= 0) THEN GO TO NOGO ;
END LP7 ;

ORGO: END ORSEARCH ;

/* IF FALL THRU FROM ABOVE, ALL IS GO */

GO: GO TO V1 (NTYPE) ;

/******

/* HERE, COJRSE RESULTS PROCESSED */

V1(1): J1 = MAXD ; /* MAX SS USED IN CRS DIRECTORY */

LP8: DO J = 1 TO J1 ; /* LOOK UP FOUND CIN */
K = J ;
IF (CINDS = CHCIN(J))
THEN GO TO CRSGO ;

LP8END: END LP8 ;

CRSNOGO: /* NO FIND IF FALL OUTTA ABOVE */
RESID = ' ' ;
RSTAT = 2 ;
RESCIN = CINDS ;

STEP7: WRITE FILE (RESU) FROM (RESULT) ;
NOUT = NOUT + 1 ;
NNF = NNF + 1 ;

GO TO RD1 ;

CRSGO: /* HERE, CRS DIRECTORY SEARCH WAS GO */
RSTAT = 1 ;
K1 = K ;
K = CINPTR (K) ;

IF (K <= MAXR) THEN GO TO STEP8 ;

ER4: NER = 4 ;

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SOURCE CARD LISTING FOR
P3: /* RANGE-OF-EFFECTS (ROE) SEARCH MODULE - WED/02/MAR/77 */

```

414          PJT STRING (DLINE) DATA ( K, K1, REFS(1), CINDS ) ;
415          GO TO BUSTED ;
416
417 STEP8:  READ FILE (COURSE) INTO (CARD) KEY ( K ) ;
418
419          IF ( CINDS /= CRSCIN ) THEN GO TO RD1 ;
420
421          RESID = ' ' ;
422          RESCIN = CRSCIN ;
423          RESCDP = CRSCDP ;
424
425          WRITE FILE (RESU) FROM (RESULT) ;
426          NOUT = NOUT + 1 ;
427          NF = NF + 1 ;
428
429          K = K + 1 ;
430          IF ( K > REFS(1) ) THEN GO TO RD1 ;
431          GO TO STEP8 ;
432
433  /*****
434
435          /* HERE, VEHICLE RESULTS ARE OUTPUT */
436
437  V1(2):  J1 = MAXD ;          /* MAX SS USED IN VEH DIRECTORY */
438          RESID = VJ13 ;
439
440  LP9:    DO J = 1 TO J1 ;
441          K = J ;
442          IF ( VJ13 = CHVEH(J) )
443              THEN GO TO VEHGO ;
444  LP9END:  END LP9 ;
445
446  VEHNOGO: /* IF FALL OUTTA ABOVE, NO FIND */
447          RDSTAT = 2 ;
448          GO TO STEP7 ;
449
450  VEHGO:  /* HERE, FOUND WANTED VEHICLE IN DIRECTORY */
451          RDSTAT = 1 ;
452
453          IF ( VEHPTR(K) <= MAXD ) THEN GO TO STEP9 ;
454
455  ER5:    NER = 5 ;
456          PUT STRING (DLINE) DATA ( K, VEHPTR(K), REFS(7),
457              RESID ) ;
458          GO TO BUSTED ;
459
460  STEP9:  WRITE FILE (RESU) FROM (RESULT) ;
461          NOUT = NOUT + 1 ;
462          NF = NF + 1 ;
463
464          GO TO RD1 ;
465
466  /*****
467
468          /* FINALLY, THE TASK RESULTS ARE PROCESSED */
469
470  V1(3):  RESID = VJ13 ;
471
472          IF ( VJ13 >= CHTASK(MAXD2) )
473              THEN DO ; BOT = MAXD2 ; TOP = MAXD ; END ;
474          ELSE DO ; BOT = 1 ; TOP = MAXD2 ; END ;
475
476  LP10:   DO J = BOT TO TOP ;
477          K = J ;
478          IF ( VJ13 = CHTASK(J) )
479              THEN GO TO TASKGO ;
480  LP10END: END LP10 ;
481
482  TASKNOGO: /* IF FALL OUTTA ABOVE, NO FIND AT ALL */

```

TAEG REPORT NO. 40

PAGE NUMBER : 8

SOURCE CARD LISTING FOR
P3: /* RANGE-OF-EFFECTS (ROE) SEARCH MODULE - WED/02/MAR/77 */

```

483          GO TO VEHNOGO ;
484
485 TASKGO:    /* HERE, TASK DIRECTORY SEARCH WAS GOLDEN */
486          ROSTAT = 1 ;
487
488          IF ( TASKPTR(K) <= REFS(11) ) THEN GO TO STEP9 ;
489
490 ER6:       NER = 6 ;
491          PJT STRING (DLINE) DATA ( K, TASKPTR(K), REFS(11),
492          RESID ) ;
493          GO TO BUSTED ;
494
495          /*****/
496
497          /* HERE, WHEN EOF REACHED ON DESCRIPTOR INPUT DATASET */
498
499 EOFDESC: CLOSE FILE (DESIGS) ;
500
501          PUT STRING (DLINE) EDIT
502          ( 'TOTAL NUMBER DESCRIPTOR RECORDS EXAMINED : ', NC )
503          ( X(7), A, P'ZZ,ZZ9' ) ;
504          DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;
505
506          PUT STRING (DLINE) EDIT
507          ( 'TOTAL RECORDS SELECTED WITH MATCHING DATA : ', NF )
508          ( X(6), A, P'ZZ,ZZ9' ) ;
509          DISPLAY ( DLINE ) ;
510
511          PUT STRING (DLINE) EDIT
512          ( 'TOTAL RECORDS SELECTED WITHOUT ABBREVIATED DATA : ',
513          NNF ) ( A, P'ZZ,ZZ9' ) ;
514          DISPLAY ( DLINE ) ;
515
516          PUT STRING (DLINE) EDIT
517          ( 'ACCUMULATED SEARCH OUTPUT RECORDS, THUS FAR : ',
518          NOUT ) ( X(4), A, P'ZZ,ZZ9' ) ;
519          DISPLAY ( DLINE ) ;
520
521          /* NOW, DETERMINE IF ANOTHER CYCLE IS REQUIRED */
522
523 TALLY:    IF ( NTYPE >= 3 ) THEN GO TO EOJ ;
524          NTYPE = NTYPE + 1 ;
525
526          GO TO START ;
527
528          /*****/
529
530          /* HERE, PROGRAM IS IN STAGE OF TERMINAL ILLNESS */
531
532 BUSTED: PUT STRING (CARD) EDIT
533          ( ' ** ERROR NUMBER ', NER, ' HAS OCCURED **' )
534          ( A, F(2), A ) ;
535          DISPLAY ( ' ' ) ;
536          DISPLAY ( CARD ) ;
537
538          DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;
539
540          /*****/
541
542          /* THIS IS THE BITTER ENDE */
543
544 EOJ:      DLINE = '** DESIGNATOR SEARCH PROGRAM IS TERMINATING' ;
545          DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;
546
547          PUT STRING (DLINE) EDIT
548          ( 'TOTAL ACCUMULATED SEARCH OUTPUT RECORDS : ',
549          NOUT ) ( A, P'ZZ,ZZ9' ) ;
550          DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;
551          DISPLAY ( ' ' ) ;

```

TAEK REPORT NO. 40

PAGE NUMBER : 9

SOURCE CARD LISTING FOR
P3: /* RANGE-OF-EFFECTS (ROE) SEARCH MODULE - WED/02/MAR/77 */

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CLOSE FILE (DIND), FILE (COURSE),
FILE (MREF), FILE (DCIN),
FILE (SARG), FILE (RESU), FILE (ID) ;
END P3 ;

PAGE NUMBER : 1

SOURCE CARD LISTING FOR

PSA: /* PRINT OF RAW ROE RESULTS FILE - MON/28/FEB/77 */

PSA: /* PRINT OF RAW ROE RESULTS FILE - MON/28/FEB/77 */
PROC (INPARM) OPTIONS (MAIN) ;/* REVISIONS :
WED/02/MAR/77 - FIRST IMPLEMENTATION.
SAT/05/MAR/77 - FINAL (HOPEFULLY) DEBUG EFFORTS.
THU/24/MAR/77 - MODS PRIOR TO TRANSMIT TO NCSS.

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```

/*
DECLARE 1 TTLCARD      STATIC,          /* PROJECT TITLE DATA BASE */
        2 PNAME        CHAR (10),      /* CKF.ID */
        2 PTTL         CHAR (70),

INPARM      CHAR (100) VARYING,
1 POVER      BASED (PP),
2 PARM2      CHAR (4),

( DISP, PTR, DPAGE, I, J, K, L, LT, NC,
  NV, NPAGE, NR, NTYPE, NV,
  NDF, NJ ) FIXED BIN STATIC,

DTTL        CHAR (23) STATIC INIT
( ' PAGE NUMBER : XXXX' ),
DDPGE       PICTURE 'ZZZ9' DEF DTTL POS (20),
MAXLTB      FIXED BIN STATIC INIT ( 60 ) ;

DECLARE VINTAGE (3)    CHAR (8) STATIC INIT
( 'COURSES', 'VEHICLES', 'TASKS' ),

DTTL2       CHAR (39) STATIC INIT
( 'RANGE-OF-EFFECTS RESULTS FOR : XXXXXXXX' );
D2TY        CHAR (8) DEF DTTL2 POS (32),
DTTL3       CHAR (39) STATIC INIT ( (39)'-' ) ;

DECLARE ( COURSE, VEHS, TASKS
        ) FILE RECORD DIRECT KEYED ENV ( REGIONAL(1) ) ;

DECLARE ( CARD, DLINE ) CHAR (80) STATIC,
C110        CHAR (10) DEF CARD,
C1180       CHAR (70) DEF CARD POS (11) ;

DECLARE 1 MAST        STATIC,
        2 REFS (40)   FIXED BIN,

1 RESULT     BASED (PR),
2 RTYP       PICTURE '9',
2 RSTAT      PICTURE '9',
2 RDSTAT     PICTURE '9',
2 RESID      CHAR (13),

1 RESC       BASED (PR),
( 2 F1, 2 F2, 2 F3 ) CHAR (1),
2 RESCIN     CHAR (8),
2 RESCDP     CHAR (4),

1 REST       BASED (PR),
( 2 F1, 2 F2, 2 F3 ) CHAR (1),
2 RATE       CHAR (5),
2 RANK       CHAR (2),
2 JOBTASK    CHAR (6),

S16         CHAR (16) STATIC,
V1 (3)      LABEL ;

```


PAGE NUMBER : 2

SOURCE CARD LISTING FOR

PSA: /* PRINT OF RAW ROE RESULTS FILE - MON/28/FEB/77 */

```

69 DECLARE T1 CHAR (32) STATIC INIT (
70 'RECNO CIN CDP COURSE' ),
71
72 T1U CHAR (37) STATIC INIT (
73 '-----' ),
74
75 T2 CHAR (46) STATIC INIT (
76 'RECNO STOCK NUMBER FILE NUM TRAINING DEVICE' ),
77
78 T2U CHAR (46) STATIC INIT (
79 '-----' ),
80
81 T3 CHAR (29) STATIC INIT (
82 'RECNO RATE RANK JOB TASK' ),
83
84 T3U CHAR (29) STATIC INIT (
85 '-----' );
86
87 DECLARE WINDUPS (6) CHAR (44) STATIC INIT (
88 ' TOTAL NUMBER COURSE RECORDS PROCESSED : ',
89 ' TOTAL NUMBER VEHICLE RECORDS PROCESSED : ',
90 ' TOTAL NUMBER JOBTASK RECORDS PROCESSED : ',
91 ' TOTAL NUMBER ROE RESULT RECORDS READ : ',
92 ' RECORDS WITHOUT MATCHING ABBREVIATED DATA : ',
93 ' TOTAL NUMBER DIRECTORY SEARCH FAILURES : ' ),
94
95 WIND (6) FIXED BIN STATIC ;
96
97 /*****/
98
99 DECLARE 1 ACRS STATIC, /* ABBR. COURSE FILE */
100 2 SET1, /* CKF.ACOURSES */
101 3 CDP CHAR (4),
102 3 CIN CHAR (8),
103 3 CST CHAR (16),
104 3 NOBC CHAR (4),
105 3 NEC CHAR (4),
106 2 PC CHAR (2),
107 2 SET2,
108 3 RMS CHAR (3),
109 3 TYCRS CHAR (2),
110 3 SVC CHAR (1),
111 3 MI CHAR (1),
112 2 STCD CHAR (1),
113 2 STDTE PICTURE '(5)9',
114 2 SET3,
115 3 TRAPS CHAR (1),
116 3 TPC CHAR (5),
117 2 ATTR PICTURE '99V9',
118 2 STBK PICTURE '99V9',
119 2 CLEN PICTURE '999',
120 2 THRS PICTURE '999',
121 2 LHS PICTURE '999',
122 2 CAJB PICTURE '(5)9V99',
123 2 CC80 CHAR (1) ;
124
125 DECLARE 1 CINDER (304) STATIC, /* CRS CIN DIRECTORY */
126 2 CHCIN CHAR (8), /* CKF.CRS.DIRCIN */
127 2 CIVPTR FIXED BIN,
128
129 LOADCIN CHAR (760) BASED (PLCIN),
130 COVCIN (4) CHAR (760) BASED (PTCIN) ;
131
132 DECLARE 1 CDPDIR (1200) STATIC, /* CRS CDP DIRECTORY */
133 2 CHCDP CHAR (4), /* CKF.CRS.DIRCDP */
134 2 CDPTR FIXED BIN,
135
136 LOADCDP CHAR (1200) BASED (PLCDP),
137 COVCDP (6) CHAR (1200) BASED (PTCDP) ;

```

PAGE NUMBER : 3

SOURCE CARD LISTING FOR
PSA: /* PRINT OF RAW ROE RESULTS FILE - MON/28/FEB/77 */

/*****/

```

DECLARE 1 AVEHICLES    STATIC,          /* ABBR. VEH FILE */
        2 STCKN      CHAR (13),        /* CKF.AVEHS */
        2 DEVDESIG   CHAR (9),
        2 DEVNAME    CHAR (47),
        2 DEVCOST    PICTURE '(8)9V99',
        2 CC90       CHAR (1),

```

```

        VCOST        FIXED DEC (10,2) STATIC,
        VOVER        CHAR (80) BASED (PV80) ;

```

```

DECLARE 1 VEHDIR (200) STATIC,          /* VEHICLE DIRECTORY */
        2 CHVEH      CHAR (13),        /* CKF.VEH.DIR */
        2 VEHPTTR    FIXED BIN,

```

```

        COVVEH (4)    CHAR (750) BASED (PTVEH),
        LOADVEH       CHAR (750) BASED (PLVEH) ;

```

/*****/

```

DECLARE 1 ATASKS        STATIC,          /* ABBR. TASK FILE */
        2 RATING      CHAR (7),        /* CKF.ATASKS */
        2 JOBTASK     CHAR (6),
        2 TASKTTL     CHAR (50),
        2 FILL        CHAR (6),
        2 BILCOST     PICTURE '(8)9V99',
        2 CC80       CHAR (1) ;

```

```

DECLARE 1 TASKDIR (1200) STATIC,          /* JOBTASK FILE DIRECTORY */
        2 CHTASK      CHAR (13),        /* CKF.TASKS.DIR */
        2 TASKPTR     FIXED BIN,

```

```

        COVTASK (12)  CHAR (1500) BASED (PTTASK),
        LOADTASK      CHAR (1500) BASED (PLTASK) ;

```

/*****/

```

START:  NTYPE, NC, NJ, NV, N3, NN, NDF,
        NPAGE, DPAGE, LT,
        J, K = 0 ;

```

```

        FLCIN, FLCDP, FLVEH, FLTASK = '0'B ;

```

```

        PP = ADDR (INPARG) ;
        PR = ADDR (S16) ;
        PTCIN = ADDR (CINDER) ;
        PTCDP = ADDR (CDPDIR) ;
        PV80 = ADDR (AVEHICLES) ;
        PTVEH = ADDR (VEHDIR) ;
        PTTASK = ADDR (TASKDIR) ;

```

COMMENCE:

```

        OPEN FILE (MREF) RECORD INPUT,
        FILE (ID) RECORD INPUT,
        FILE (COURSE) INPUT,
        FILE (DCIN) RECORD INPUT,
        FILE (DCDP) RECORD INPUT,
        FILE (VEHS) INPUT,
        FILE (DVEH) RECORD INPUT,
        FILE (TASKS) INPUT,
        FILE (DTASK) RECORD INPUT,
        FILE (RESU) RECORD INPUT ;

```

```

        ON ENDFILE (RESU) GO TO EOF ;

```

```

        READ FILE (MREF) INTO (MAST) ;

```

PAGE NUMBER : 4

SOURCE CARD LISTING FOR
P5A: /* PRINT OF RAW ROE RESULTS FILE - MON/28/FEB/77 */

/*****/

/* HERE, DEVICE ASSIGNMENTS ARE VERIFIED */

```

FIRST: DISP, PTR = 1 ;
      IF ( PARM2 = 'BOTH' ) THEN GO TO STEPA ;
      IF ( PARM2 = 'TERM' )
        THEN PTR = 2 ;
        ELSE DISP = 2 ;

```

/* HERE, PRINTER DATASET IS INITIALIZED */

```

STEPA: IF ( PTR = 2 ) THEN GO TO STEPB ;
      OPEN FILE (SYSPRINT)
        LINESIZE (120) PAGESIZE (60) ;

      ON ENDPAGE (SYSPRINT)
        BEGIN ;
        NPAGE = NPAGE + 1 ;

        PUT EDIT ( 'PAGE NUMBER : ', NPAGE )
          ( PAGE, X(10), A, F(4) ) ;

        IF ( NTYPE = 1 ) THEN
          DO ;
          PUT EDIT ( T1, T1U, ' ' ) ( R(FMT1) ) ;
          GO TO SKP ;
          END ;

FMT1:  FORMAT ( 3 ( SKIP(1), A ) ) ;

      IF ( NTYPE = 2 )
        THEN PUT EDIT ( T2, T2U, ' ' ) ( R(FMT1) ) ;
        ELSE PUT EDIT ( T3, T3U, ' ' ) ( R(FMT1) ) ;

SKP:   PUT SKIP (1) ;
      END ;

```

/* HERE, INITIALIZATION OF TERMINAL DATASET PROCEEDS */

```

STEPB: IF ( DISP = 2 ) THEN GO TO STEPC ;

      ON CONDITION (NEWDP)
        BEGIN ;
        IF ( LT < 61 ) THEN LT = 61 ;

LPA:   IF ( LT < 66 ) THEN
        DO L = LT TO 66 ;
        DISPLAY ( ' ' ) ;
        END LPA ;

      DISPLAY ( ' ' ) ;

      DPAGE = DPAGE + 1 ;
      DDPGE = DPAGE ;
      DISPLAY ( DTTL ) ;
      DISPLAY ( ' ' ) ;
      LT = 3 ;

      DISPLAY ( DTTL2 ) ; DISPLAY ( DTTL3 ) ;
      DISPLAY ( ' ' ) ;
      LT = LT + 3 ;
      END ;

```

/* NOW, MASTER TITLE STRIP IS OUTPUT */

STEP3: READ FILE (ID) INTO (CARD) ;

PAGE NUMBER : 5

SOURCE CARD LISTING FOR
P5A: /* PRINT OF RAW ROE RESULTS FILE - MON/28/FEB/77 */

```

276      DLINE = (10)' ' || '** INITIAL SEARCH RESULTS FOR PROJECT -'
277      || C110 || '**';
278      CARD = (12)' ' || C1180 ;
279      DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;
280      DISPLAY ( CARD ) ; DISPLAY ( ' ' ) ;
281
282      IF ( PTR = 2 ) THEN GO TO RD1 ;
283      PUT EDIT ( DLINE, CARD ) ( SKIP(3), A, SKIP(1), A ) ;
284      GO TO RD1 ;
285
286      /*****
287      /* HEREIN, IS START OF MAINLINE LOOP */
288
289      RD1:  READ FILE (RESU) INTO (S16) ;
290      NR = NR + 1 ;
291      IF ( RTYP = NTYPE ) THEN GO TO STEP1 ;
292
293      NTYPE = RTYP ;
294      D2TY = VINTAGE ( NTYPE ) ;
295      IF ( PTR = 1 ) THEN SIGNAL ENDPAGE (SYSPRINT) ;
296      IF ( DISP = 1 ) THEN SIGNAL CONDITION (NEWDP) ;
297
298      STEP1: GO TO V1 ( NTYPE ) ;
299
300      /* HERE, A COURSE RECORD IS PROCESSED */
301
302      V1(1): NC = NC + 1 ;
303
304      IF ( RSTAT = 2 ) THEN
305      NOCDATA: DO ;
306      NV = NN + 1 ;
307      PUT STRING (DLINE) EDIT
308      ( NR, RESCIN, 'NOTE - NO MATCHING NITRAS DATA',
309      ' AVAILABLE FOR THIS CIN' )
310      ( P'ZZ,ZZ9', X(1), A(8), X(2), A, A ) ;
311
312      GO TO OUTLOOP ;
313      END NOCDATA ;
314
315      YECOP = RESCOP ;
316      LOOKU = STEP2 ;
317      GO TO FINDCOP ;
318
319      STEP2: IF ( CDPREC = 0 ) THEN
320      LP1: DO ;
321      NDF = NDF + 1 ;
322
323      PUT STRING (DLINE) EDIT
324      ( NR, RESCIN, RESCOP, '** COP COULD NOT ',
325      ' BE LOCATED IN COP DIRECTORY' )
326      ( P'ZZ,ZZ9', X(1), A(8), X(1), A(4),
327      X(2), A, A ) ;
328
329      GO TO OUTLOOP ;
330      END LP1 ;
331
332      READ FILE (COURSE) INTO (ACRS) KEY (CDPREC) ;
333      PUT STRING (DLINE) EDIT ( NR, RESCIN, RESCOP, CST )
334      ( P'ZZ,ZZ9', X(1), A(8), X(1), A(4), X(1), A(16) ) ;
335
336      GO TO OUTLOOP ;
337
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PAGE NUMBER : 6

SOURCE CARD LISTING FOR
P5A: /* PRINT OF RAW ROE RESULTS FILE - MON/28/FEB/77 */

/* HERE, VEHICLE TYPE RECORDS ARE PROCESSED */

```

345
346
347 V1(2): NV = NV + 1 ;
348
349 IF ( ROSTAT = 2 ) THEN
350 NOVDATA: DO ;
351 NV = NV + 1 ;
352
353 PUT STRING (DLINE) EDIT
354 ( NR, RESID, '*** NO ABBREVIATED VEHICLE DATA ',
355 'AVAILABLE ***' )
356 ( P'ZZ,ZZ9', X(1), A(13), X(2), A, A ) ;
357
358 GO TO OUTLOOP ;
359 END NOVDATA ;
360
361 YEVEH = RESID ;
362 LOOKU = STEP3 ;
363 GO TO FINDVEH ;
364
365 STEP3: PUT STRING (DLINE) EDIT ( NR, RESID )
366 ( P'ZZ,ZZ9', X(1), A(13) ) ;
367
368 IF ( VEHREC = 0 ) THEN
369 LP2: DO ;
370 NDF = NDF + 1 ;
371
372 SUBSTR ( DLINE, 22 ) =
373 '*** STOCK NUMBER COULD NOT BE LOCATED IN ' ||
374 'DIRECTORY ***' ;
375
376 GO TO OUTLOOP ;
377 END LP2 ;
378
379 READ FILE (VEHS) INTO (AVEHCLES) KEY (VEHREC) ;
380
381 SUBSTR ( DLINE, 22 ) =
382 DEVDESIG || ' ' || DEVNAME ;
383
384 GO TO OUTLOOP ;
385
386 /* NOW, PROCESS A TASK RECORD HERE */
387
388 V1(3): NJ = NJ + 1 ;
389
390 PUT STRING (DLINE) EDIT ( NR, RATE, RANK, REST, JOBTASK )
391 ( P'ZZ,ZZ9', X(1), A(5), X(1), A(2), X(1), A(6) ) ;
392
393 IF ( ROSTAT = 2 ) THEN
394 NOTDATA: DO ;
395 NV = NV + 1 ;
396
397 SUBSTR ( DLINE, 26 ) =
398 '*** NO ABBREVIATED TASK DATA IS AVAILABLE ***' ;
399
400 GO TO OUTLOOP ;
401 END NOTDATA ;
402
403 YETASK = RESID ;
404 LOOKU = STEP4 ;
405 GO TO FINDTASK ;
406
407 STEP4: IF ( TASKREC = 0 ) THEN
408 LP3: DO ;
409 NDF = NDF + 1 ;
410
411 SUBSTR ( DLINE, 26 ) =
412 '*** TASK ID COULD NOT BE LOCATED IN DIRECTORY ***' ;
413

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PAGE NUMBER : 7

SOURCE CARD LISTING FOR

PSA: /* PRINT OF RAW ROE RESULTS FILE - MON/28/FEB/77 */

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414          GO TO OUTLOOP ;
415      END LP3 ;
416
417      READ FILE (TASKS) INTO (ATASKS) KEY (TASKREC) ;
418
419      SUBSTR ( DLINE, 26 ) = TASKTTL ;
420
421      GO TO OUTLOOP ;
422
423      /* HERE IS THE PRINTED LINE OUTPUT SEQUENCE */
424
425      OUTLOOP: IF ( PTR = 1 )
426                THEN PUT LIST (DLINE) SKIP (1) ;
427
428      IF ( DISP = 2 ) THEN GO TO RD1 ;
429
430      IF ( LT > MAXLTB ) THEN SIGNAL CONDITION (NEWDP) ;
431      DISPLAY ( DLINE ) ;
432      LT = LT + 1 ;
433
434      GO TO RD1 ;
435
436      /*****
437
438      DECLARE ( FLCIN, FLCDP, FLVEH, FLTASK )      BIT (1) STATIC,
439              YECIN          CHAR (8) STATIC,
440              YECDP          CHAR (4) STATIC,
441              ( YETASK, YEVEH ) CHAR (13) STATIC,
442              ( CINREC, CDPREC, VEHREC, TASKREC, VEHMAX, TASKMAX,
443                CINMAX, CDPMAX )    FIXED BIN STATIC,
444              LOOKU          LABEL ;
445
446      /* CIN DIRECTORY LOOKUP SUBROUTINE
447
448      ENTRY : DESIRED CIN IN YECIN
449      EXIT  : CINREC = 0 (NO FIND) OR REG NUMBER
450      RETURN VECTOR IS LOOKU      */
451
452      FINDCIN: IF ( FLCIN ) THEN GO TO CIN2 ;
453
454      CINMAX = REFS (2) ;
455      FLCIN = '1'B ;
456
457      CINLOAD: DO J = 1 TO 4 ;
458                PLCIN = ADDR ( COVCIN (J) ) ;
459                READ FILE (DCIN) INTO (LOADCIN) ;
460                END CINLOAD ;
461
462      CIN2: DO I = 1 TO CINMAX ;
463             IF ( YECIN ^= CHCIN(I) ) THEN GO TO ECIN2 ;
464             CINREC = CINPTR (I) ;
465             GO TO LOOKU ;
466
467      ECIN2: END CIN2 ;
468
469      NFCIN: CINREC = 0 ;
470             GO TO LOOKU ;
471
472      /* CDP DIRECTORY LOOKUP SUBROUTINE
473      ENTRY : DESIRED CDP IN YECDP
474      EXIT  : CDPREC = 0 (NO FIND), OR REC NUMBER
475      RETURN VECTOR IS LOOKU      */
476
477      FINDCDP: IF ( FLCDP ) THEN GO TO CDP2 ;
478
479      CDPMAX = REFS (3) ;
480      FLCDP = '1'B ;
481
482      CDPLOAD: DO J = 1 TO 4 ;
                PLCDP = ADDR ( COVCDP (J) ) ;

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PAGE NUMBER : 8

SOURCE CARD LISTING FOR
PSA: /* PRINT OF RAW ROE RESULTS FILE - MON/28/FEB/77 */

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483      READ FILE (DCDP) INTO (LOADCDP) ;
484      END CDPLOAD ;
485
486 CDP2:      DO I = 1 TO CDPMAX ;
487           IF ( YECDP /= CHCDP(I) ) THEN GO TO ECDP2 ;
488           CDPREC = CDPTR(I) ;
489           GO TO LOOKU ;
490
491 ECDP2:      END CDP2 ;
492
493 NFCDP:     CDPREC = 0 ;
494           GO TO LOOKU ;
495
496 /* VEHICLE ID LOOKUP SUBROUTINE
497 ENTRY : DESIRED VEH ID IN YEVEH
498 EXIT : VEHREC = 0 (NO FIND), OR REC NUMBER
499 RETURN VECTOR IS LOOKU */
500 FINDVEH: IF ( FLVEH ) THEN GO TO VEH2 ;
501
502      VEHMAX = REFS (8) ;
503      FLVEH = '1'B ;
504
505 VEHLOAD:   DO J = 1 TO 4 ;
506           PLVEH = ADDR ( COVVEH (J) ) ;
507           READ FILE (DVEH) INTO (LOADVEH) ;
508           END VEHLOAD ;
509
510 VEH2:      DO I = 1 TO VEHMAX ;
511           IF ( YEVEH /= CHVEH(I) ) THEN GO TO EVEH2 ;
512           VEHREC = VEHPT (I) ;
513           GO TO LOOKU ;
514
515 EVEH2:     END VEH2 ;
516
517 NFVEH:     VEHREC = 0 ;
518           GO TO LOOKU ;
519
520 /* TASK ID DIRECTORY LOOKUP SUBROUTINE
521 ENTRY : DESIRED TASK ID (13-CHAR) IN YETASK
522 EXIT : TASKREC = 0 (NO FIND) OR REC NUMBER
523 RETURN VECTOR IS LOOKU */
524 FINDTASK: IF ( FLTASK ) THEN GO TO TASK2 ;
525
526      TASKMAX = REFS (12) ;
527      FLTASK = '1'B ;
528
529 TASKLOAD:  DO J = 1 TO 12 ;
530           PLTASK = ADDR ( COVTASK (J) ) ;
531           READ FILE (DTASK) INTO (LOADTASK) ;
532           END TASKLOAD ;
533
534 TASK2:     DO I = 1 TO TASKMAX ;
535           IF ( YETASK /= CHTASK(I) ) THEN GO TO ETASK2 ;
536           TASKREC = TASKPTR (I) ;
537           GO TO LOOKU ;
538
539 ETASK2:    END TASK2 ;
540
541 NFTASK:    TASKREC = 0 ;
542           GO TO LOOKU ;
543
544 /*****/
545 /* HERE IS EOF WINDUP PROCESSING */
546
547 EOF:       WIND(1) = NC ;      WIND(2) = NV ;
548           WIND(3) = NJ ;      WIND(4) = NR ;
549           WIND(5) = NN ;      WIND(6) = NDF ;
550
551           IF ( PTR = 1 ) THEN PUT SKIP (3) ;

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PAGE NUMBER : 9

SOURCE CARD LISTING FOR
PSA: /* PRINT OF RAW ROE RESULTS FILE - MON/28/FEB/77 */

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      DISPLAY ( ' ' ) ;      DISPLAY ( ' ' ) ;
      DISPLAY ( '** RESULTS FILE NOW AT END-OF-FILE **' ) ;
      DISPLAY ( ' ' ) ;

SUMMARY:      DO J = 1 TO 6 ;
               PUT STRING (DLINE) EDIT
                 ( WINDUPS(J), WIND(J) ) ( A(44), P'ZZ,ZZ9' ) ;

               IF ( PTR = 1 )
                 THEN PUT LIST ( (10)' ' || DLINE ) SKIP (1) ;

               DISPLAY ( DLINE ) ;

               END SUMMARY ;

CLOSE FILE (MREF), FILE (ID), FILE (RESU),
          FILE (COURSE), FILE (DCDP),
          FILE (VEHS), FILE (DVEH),
          FILE (TASKS), FILE (DTASK) ;

IF ( PTR = 1 ) THEN CLOSE FILE (SYSPRINT) ;
DISPLAY ( ' ' ) ;

END PSA ;

```


PAGE NUMBER : 1

SOURCE CARD LISTING FOR
P5B: /* INTERACTIVE SEARCH RESULTS EDITOR - WED/09/MAR/77 */

```

1  P5B:  /* INTERACTIVE SEARCH RESULTS EDITOR - WED/09/MAR/77 */
2  PROC OPTIONS (MAIN) ;
3
4  /* REVISIONS :
5  FRI/11/MAR/77 - VERYFIRST IMPLEMENTATION.
6
7  MON/21/MAR/77 - MODS PRIOR TO TRANSMIT TO NCSS.
8  */
9
10 DECLARE ( TOTREC, MOD, N, N1, N2, L1, L2, L3, NREC, NRECA, NADD,
11           NLINE, NEE, I, J1, J2, J3, J4, MAXADD, MAXD, MAXR,
12           NCONV, NER, NFIRST, NN, NOS,
13           J, K, L ) FIXED BIN STATIC,
14
15           ( CARD, DLINE ) CHAR (80) STATIC,
16           C110 CHAR (10) DEF CARD POS (1),
17           C1180 CHAR (70) DEF CARD POS (11),
18           C15 CHAR (5) DEF CARD,
19           C16 CHAR (6) DEF CARD,
20           C12 CHAR (2) DEF CARD,
21           C17 CHAR (7) DEF CARD,
22           CTAB (80) CHAR (1) DEF CARD,
23
24           ( N1C, N2C ) CHAR (5) STATIC,
25           ( ROUTEX, V1(3),
26             ROUTE ) LABEL ;
27
28 DECLARE ( COURSE, VEHS,
29           TASKS ) FILE RECORD DIRECT KEYED ENV ( REGIONAL(1) ) ;
30
31 DECLARE ADDS (500) CHAR (16) STATIC,
32
33 NEW CHAR (16) STATIC,
34 NTPY PICTURE '9' DEF NEW POS (1),
35 NSTAT PICTURE '9' DEF NEW POS (2),
36 NDSTAT PICTURE '9' DEF NEW POS (3),
37 NID CHAR (13) DEF NEW POS (4),
38 NCIN CHAR (8) DEF NEW POS (4),
39 NCDP CHAR (4) DEF NEW POS (12),
40 NRATE CHAR (5) DEF NEW POS (4),
41 NRANK CHAR (2) DEF NEW POS (9),
42 NJTASK CHAR (6) DEF NEW POS (11),
43
44 1 MODS (500) BASED (PM),
45 2 MTPY CHAR (1),
46 2 MSTAT CHAR (1),
47 2 MDSTAT CHAR (1),
48 2 FILL CHAR (13) ;
49
50 DECLARE 1 RESULT (1200) STATIC,
51 2 RTYP PICTURE '9',
52 2 RSTAT PICTURE '9',
53 2 ROSTAT PICTURE '9',
54 2 RESID CHAR (13),
55
56 RESREC (1200) CHAR (16) BASED (PR),
57 S16 CHAR (16) STATIC,
58
59 1 RESC (1200) BASED (PR),
60 ( 2 F1, 2 F2, 2 F3 ) CHAR (1),
61 2 RESCIN CHAR (8),
62 2 RESCDP CHAR (4),
63 2 F4 CHAR (1),
64
65 1 REST (1200) BASED (PR),
66 ( 2 F1, 2 F2, 2 F3 ) CHAR (1),
67 2 RATE CHAR (5),
68 2 RANK CHAR (2),

```

PAGE NUMBER : 2

SOURCE CARD LISTING FOR
P58: /* INTERACTIVE SEARCH RESULTS EDITOR - WED/09/MAR/77 */

```

69      2 JOBTASK      CHAR (6) ;
70
71 DECLARE 1 MAST      STATIC,
72          2 REFS (40)  FIXED BIN ;
73
74 DECLARE 1 TTLCARD    STATIC,          /* PROJECT TITLE DATA BASE */
75          2 PNAME     CHAR (10),       /* CKF.TITLE */
76          2 PTTL      CHAR (70);
77
78      INPARM          CHAR (100) VARYING,
79
80      1 POVER         BASED (PP),
81          2 PARM1     CHAR (4),
82          2 PARM2     CHAR (4) ;
83
84 /******
85
86 DECLARE 1 CINDER (304) STATIC,          /* CRS CIN DIRECTORY */
87          2 CHCIN     CHAR (8),         /* CKF.CRS.DIRCIN */
88          2 CINPTR    FIXED BIN,
89
90      LOADCIN         CHAR (760) BASED (PLCIN),
91      COVCIN (4)      CHAR (760) BASED (PTCIN) ;
92
93 DECLARE 1 CDPDIR (1200) STATIC,         /* CRS CDP DIRECTORY */
94          2 CHCDP     CHAR (4),         /* CKF.CRS.DIRCDP */
95          2 CDPPTR    FIXED BIN,
96
97      LOADCDP         CHAR (1200) BASED (PLCDP),
98      COVCDP (6)      CHAR (1200) BASED (PTCDP) ;
99
100 DECLARE 1 ACRS      STATIC,            /* ABBR. COURSE FILE */
101          2 SET1,          /* CKF.ACOURSES */
102              3 CDP        CHAR (4),
103              3 CIN        CHAR (8),
104              3 CST        CHAR (16),
105              3 NOBC       CHAR (4),
106              3 NEC        CHAR (4),
107          2 PC          CHAR (2),
108          2 SET2,
109              3 RMS        CHAR (3),
110              3 TYCRS      CHAR (2),
111              3 SVC        CHAR (1),
112              3 MI         CHAR (1),
113          2 STCD        CHAR (1),
114          2 STDTE       PICTURE '(5)9',
115          2 SET3,
116              3 TRAPS      CHAR (1),
117              3 TPC        CHAR (5),
118          2 ATTR        PICTURE '99V9',
119          2 STBK        PICTURE '99V9',
120          2 CLEN        PICTURE '999',
121          2 THRS        PICTURE '999',
122          2 LHR5        PICTURE '999',
123          2 CAJB        PICTURE '(5)9V99',
124          2 CC80        CHAR (1) ;
125
126 /******
127
128 DECLARE 1 VEHDIR (200) STATIC,          /* VEHICLE DIRECTORY */
129          2 CHVEH      CHAR (13),       /* CKF.VEH.DIR */
130          2 VEMPTR     FIXED BIN,
131
132      COVVEH (4)      CHAR (750) BASED (PTVEH),
133      LOADVEH        CHAR (750) BASED (PLVEH) ;
134
135 DECLARE 1 AVEHICLES  STATIC,            /* ABBR. VEH FILE */
136          2 STCKN      CHAR (13),       /* CKF.AVEHS */
137          2 DEVDESIG   CHAR (9),

```

PAGE NUMBER : 3

SOURCE CARD LISTING FOR

P5B: /* INTERACTIVE SEARCH RESULTS EDITOR - WED/09/MAR/77 */

```

138      2 DEVNAME      CHAR (47),
139      2 DEVCOST      PICTURE '(8)9V99',
140      2 CC80         CHAR (1),
141
142      VOVER          CHAR (80) BASED (PV80) ;
143
144      /*****
145
146      DECLARE 1 TASKDIR (1200) STATIC,          /* JOBTASK FILE DIRECTORY */
147              2 CHTASK      CHAR (13),          /* CKF.TASKS.DIR */
148              2 TASKPTR     FIXED BIN,
149
150              COVTASK (12)  CHAR (1500) BASED (PTTASK),
151              LOADTASK      CHAR (1500) BASED (PLTASK) ;
152
153      DECLARE 1 ATASKS      STATIC,              /* ABBR. TASK FILE */
154              2 RATING      CHAR (7),           /* CKF.ATASKS */
155              2 JOBTASK     CHAR (6),
156              2 TASKTTL     CHAR (50),
157              2 FILL        CHAR (6),
158              2 BILCOST     PICTURE '(8)9V99',
159              2 CC80        CHAR (1) ;
160
161      /*****
162
163      START:  MOD, TOTREC, NADD, MAXADD, NEE,
164              J, K = 0 ;
165
166      PM = ADDR (ADDS) ;
167      PR = ADDR (RESULT) ;
168      PTCIN = ADDR (CINDER) ;
169      PTCOP = ADDR (CDPDIR) ;
170      PTVEH = ADDR (VEHDIR) ;
171      PV80 = ADDR (AVEHICLES) ;
172      PTTASK = ADDR (TASKDIR) ;
173      PP = ADDR (INPARM) ;
174
175      ADDS = ' ' ;
176
177      COMMENCE:
178      OPEN FILE (MREF) RECORD INPUT,
179            FILE (ID) RECORD INPUT,
180            FILE (COURSE) INPUT,
181            FILE (DCIN) RECORD INPUT,
182            FILE (DCOP) RECORD INPUT,
183            FILE (VEHS) INPJ,
184            FILE (DVEH) RECORD INPUT,
185            FILE (TASKS) INPUT,
186            FILE (DTASK) RECORD INPUT,
187            FILE (RESU) RECORD INPUT;
188
189      READ FILE (MREF) INTO (MAST) ;
190
191      ON CONVERSION
192      BEGIN ;
193      DLINE = ' ' ; ** ILLEGAL NUMERIC CONVERSION ** ;
194      DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;
195      GO TO PROMPTA ;
196      END ;
197
198      /* HERE, LEADIN TITLE STRIP IS PRODUCED */
199
200      READ FILE (ID) INTO (CARD) ;
201
202      DLINE = (10)' ' || '** ROE SEARCH RESULTS EDIT FOR PROJECT '
203              || C110 || ' **' ;
204      CARD = (13)' ' || C1180 ;
205
206      DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;

```

TAEG REPORT NO. 40

PAGE NUMBER : 4

SOURCE CARD LISTING FOR
PSB: /* INTERACTIVE SEARCH RESULTS EDITOR - WED/09/MAR/77 */

```

207      DISPLAY ( CARD ) ;
208      DISPLAY ( ' ' ) ;
209
210      /*****/
211
212      /* FIRST, FETCH THE RESULTS FILE INTO MS */
213
214      ON ENDFILE (RESU) GO TO LOAD2 ;
215
216      LOADR:      DO J = 1 TO 1200 ;
217                  READ FILE (RESU) INTO (S16) ;
218                  TOTREC = J ;
219                  RESREC (J) = S16 ;
220                  END LOADR ;
221
222      ER1:      NER = 1 ;
223                DLINE = ; MORE THAN 1200 RESULTS RECORDS - CANNOT EDIT ;
224                GO TO BUSTED ;
225
226      LOAD2:      CLOSE FILE (RESU) ;
227
228                  PUT STRING (DLINE) EDIT
229                      ( '** ', TOTREC, ' HAVE BEEN LOADED INTO ',
230                      ' MEMORY FOR EDITING' ) ( A, F(4), A, A ) ;
231
232                  DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;
233
234      /*****/
235
236      /* HERE IS CENTRAL PROMPT LOOP AND REPLY-LOOKUP SEQUENCE */
237
238      PROMPTA:      DISPLAY ( ' ' ) ;
239                    DISPLAY ( '** MAKE NEXT ACTION REQUEST' ) REPLY ( CARD ) ;
240
241                    IF ( CARD = ' ' ) THEN GO TO PROMPTA ;
242
243                    IF ( CTAB(1) = ' ' ) THEN GO TO ELOOK ;
244      LP1:      DO J = 1 TO 20 ;
245                  IF ( CTAB(J) = ' ' ) THEN GO TO ELPI ;
246                  CARD = SUBSTR ( CARD, J ) ;
247                  GO TO ELOOK ;
248      ELPI:      END LP1 ;
249
250      BUMENTRY:      DISPLAY ( ' ' ) ;
251                    DISPLAY ( (10) ' ' ) ; '** CANNOT DECODE LAST ENTRY '
252                    || '- TRY AGAIN' ;
253                    GO TO PROMPTA ;
254
255      ELOOK:      IF ( C12 = 'D ' ) | ( C17 = 'DELETE ' )
256                  THEN GO TO DELETE ;
257
258                  IF ( C12 = 'P ' ) | ( C16 = 'PRINT ' )
259                  THEN GO TO PRINT ;
260
261                  IF ( C15 = 'ADDC ' ) THEN GO TO ADDCOURSE ;
262                  IF ( C15 = 'ADDV ' ) THEN GO TO ADDVEHICLE ;
263                  IF ( C15 = 'ADDJ ' ) | ( C15 = 'ADDT ' )
264                  THEN GO TO ADDJOBTASK ;
265                  IF ( C15 = 'QUIT ' ) THEN GO TO QUIT ;
266
267                  GO TO BUMENTRY ;
268
269      /*****/
270
271      /* THIS IS PROCESSOR FOR SINGLE / MULTIPLE DELETES */
272
273      DELETE:      ROUTE = STEP1 ;
274                  GO TO FINDNOS ;
275

```


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PAGE NUMBER : 5

SOURCE CARD LISTING FOR
P5B: /* INTERACTIVE SEARCH RESULTS EDITOR - WED/09/MAR/77 */

```

276 STEP1: K = N1 ;
277         IF ( N2 = 0 ) THEN N2 = N1 ;
278
279 STEP2:     ROUTE = STEP3 ;
280           GO TO FINDREC ;
281
282 STEP3:     IF ( K > TOTREC )
283             THEN DO ; MTYP (NRECA) = '0' ; END ;
284             ELSE DO ; ROSTAT (NREC) = 3 ; END ;
285
286             K = K + 1 ;
287             IF ( K <= N2 ) THEN GO TO STEP2 ;
288
289             DLINE = 'DELETED RECORD NUMBER : ' || N1C ;
290             IF ( NOS = 2 ) THEN
291                 SUBSTR (DLINE,31) = 'THRU ' || N2C ;
292
293 STEP4:     DISPLAY ( DLINE ) ;
294
295 STEP5:     MOD = 1 ;           /* SIGNAL, FILE HAS BEEN CHANGED */
296           GO TO PROMPTA ;
297
298 /******
299
300 /* HEREIN IS THE PROCESSING FOR THE KEYBOARD PRINT COMMAND */
301
302 PRINT:     ROUTE = STEP6 ;
303           GO TO FINDNOS ;
304
305 STEP6:     K = N1 ;
306           IF ( NOS = 1 ) THEN N2 = N1 ;
307
308 STEP7:     ROUTE = STEP8 ;
309           GO TO FINDREC ;
310
311 STEP8:     IF ( K > TOTREC )
312             THEN NEW = ADDS (NRECA) ;
313             ELSE NEW = RESREC (NREC) ;
314
315             N = NTYP ;
316             IF ( N > 0 ) & ( N < 4 ) THEN GO TO V1 (N) ;
317
318 ER2:       NER = 2 ;
319           PJT STRING (DLINE) DATA ( NEW, N, K ) ;
320           GO TO BUSTED ;
321
322 /* HERE, COURSE RESULTS ARE PRINTED */
323
324 V1(1):     MAXD = REFS (2) ; /* MAX SS USED IN DIRECTORY */
325           MAXR = REFS (1) ; /* MAX COURSE REC NUM */
326           NLINE = 1 ;      /* ALWAYS 1 LINE WITH COURSES */
327
328           PUT STRING (DLINE) EDIT ( 'RECNO/CIN/CDP/TITLE : ',
329                                     K, '/', NCIN, '/', NCDP, '/' )
330                                     ( A, P'ZZ,ZZ9', A, A(8), A, A(4), A ) ;
331
332           IF ( NOSTAT = 1 ) THEN GO TO STEP9 ;
333           SUBSTR (DLINE,45) = '(NO MATCHING DATA)' ;
334           GO TO OUTLOOP ;
335
336 STEP9:     YECDP = NCDP ;
337           LOOKU = STEP10 ;
338           GO TO FINDCDP ;
339
340           IF ( CDPREC > 0 ) THEN GO TO STEP10 ;
341           SUBSTR (DLINE,45) = 'CDP NOT IN DIRECTORY' ;
342           GO TO OUTLOOP ;
343
344

```

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SOURCE CARD LISTING FOR
P5B: /* INTERACTIVE SEARCH RESULTS EDITOR - WED/09/MAR/77 */

```

345 STEP10: IF ( CDPREC <= MAXR ) THEN GO TO STEP11 ;
346 ER3:      NER = 3 ;
347           PJT STRING (DLINE) DATA ( CDPREC, MAXR, K ) ;
348           GO TO BUSTED ;
349
350 STEP11: READ FILE (COURSE) INTO (ACRS) KEY (CDPREC) ;
351         SUBSTR (DLINE,45) = CST ;
352
353         GO TO OUTLOOP ;
354
355         /* HERE, VEHICLE RECORD PRINTING IS SETUP */
356
357 V1(2):  MAXD = REFS (8) ;
358         MAXR = REFS (7) ;
359         NLINE = 1 ;
360         NN = 46 ;
361
362         PUT STRING (DLINE) EDIT ( 'RECNO/STOCK/FILE NUM : ', K,
363         ' ', NID, ' ' ) ( A, P'ZZ,ZZ9', A, A(13), A ) ;
364
365         IF ( NDSTAT = 1 ) THEN GO TO STEP12 ;
366 STP12A: SUBSTR (DLINE,NN) = ' (NO MATCHING DATA)' ;
367         GO TO OUTLOOP ;
368
369 STEP12: YEVEH = NID ;
370         LOOKU = STEP13 ;
371         GO TO FINDVEH ;
372
373 STEP13: IF ( VEHREC > 0 ) THEN GO TO STEP14 ;
374         SUBSTR (DLINE,45) = 'VEHICLE NOT IN DIRECTORY' ;
375         GO TO OUTLOOP ;
376
377 STEP14: IF ( VEHREC <= MAXR ) THEN GO TO STEP15 ;
378 ER4:      NER = 4 ;
379           PJT STRING (DLINE) DATA ( VEHREC, MAXR, K ) ;
380           GO TO BUSTED ;
381
382 STEP15: READ FILE (VEHS) INTO (AVEHICLES) KEY (VEHREC) ;
383         SUBSTR (DLINE,45) = DEVDESIG ;
384         CARD = ' ' ;
385         SUBSTR (CARD,21) = DEVNAME ;
386
387 STP15A:  NLINE = 2 ;
388         GO TO OUTLOOP ;
389
390         /* HERE, FINALLY, JOBTASK PROCESSING ENSUES */
391
392 V1(3):  MAXD = REFS (12) ;
393         MAXR = REFS (11) ;
394         NLINE = 1 ;
395         NN = 47 ;
396
397         PUT STRING (DLINE) EDIT ( 'RECNO/RATE/RANK/JOB : ', K,
398         ' ', NRATE, ' ', NRANK, ' ', NJTASK )
399         ( A, P'ZZ,ZZ9', A, A, A, A, A, A ) ;
400
401         IF ( NDSTAT = 2 ) THEN GO TO STP12A ;
402
403         YETASK = NID ;
404         LOOKU = STEP16 ;
405         GO TO FINDTASK ;
406
407 STEP16: IF ( TASKREC > 0 ) THEN GO TO STEP17 ;
408         SUBSTR (DLINE,47) = 'JOBTASK NOT IN DIRECTORY' ;
409         GO TO OUTLOOP ;
410
411 STEP17: IF ( TASKREC <= MAXR ) THEN GO TO STEP18 ;
412
413

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SOURCE CARD LISTING FOR
P5B: /* INTERACTIVE SEARCH RESULTS EDITOR - WED/09/MAR/77 */

```

414 ER5:          NER = 5 ;
415          PUT STRING (DLINE) DATA ( TASKREC, MAXR, K ) ;
416          GO TO BUSTED ;
417
418 STEP18: READ FILE (TASKS) INTO (ATASKS) KEY (TASKREC) ;
419
420          CARD = ' ' ;
421          SUBSTR ( CARD, 10 ) = TASKTTL ;
422
423          GO TO STP15A ;
424
425          /* HERE IS THE COMMON OUTPUT SEQUENCE FOR COURSES, VEHICLES,
426             AND TASKS RECORD PRINT */
427
428 OUTLOOP: DISPLAY ( ' ' ) ;
429          DISPLAY ( DLINE ) ;
430
431          IF ( NLINE = 2 ) THEN
432              DISPLAY ( CARD ) ;
433
434          K = K + 1 ;
435          IF ( K <= N2 ) THEN GO TO STEP7 ;
436
437          DISPLAY ( ' ' ) ;
438          GO TO PROMPTA ;
439
440          /*****/
441
442          /* HERE WE HAVE THE PROCESSING ROUTINES FOR THE ADD-COURSES
443             (ADDC) KEYBOARD ENTRY */
444
445 ADDCOURSE:
446 ADDC:  IF ( MAXADD > 0 ) THEN GO TO BUMADD ;
447
448          MAXD = REFS (2) ;
449          MAXR = REFS (1) ;
450          NFIRST = 1 ;
451          NLINE = 1 ;
452
453          ROUTEX = PROMPTA ;
454          ROUTE = STEP19 ;
455          GO TO FINDASLASH ;
456
457 STEP19: YECIN = SUBSTR ( CARD, (J1+1), (J2-J1-1) ) ;
458          YECOP = ' ' ;
459
460          IF ( J3 = 0 ) | ( (J3 - J2) = 1 ) THEN GO TO STP19A ;
461          YECOP = SUBSTR ( CARD, (J2 + 1), (J3 - J2 - 1) ) ;
462
463 STP19A: NTYP = 1 ; NSTAT = 2 ; NOSTAT = 2 ;
464          NID = ' ' ; NCIN = YECIN ; NCOP = YECOP ;
465
466          NADD = NADD + 1 ;
467          IF ( NADD <= 500 ) THEN GO TO STEP20 ;
468
469 BUMADD:  NADD = NADD - 1 ;
470          MAXADD = NADD ;
471
472          DLINE = '*** A TOTAL OF ' || NADD || ' NEW RECORDS HAVE '
473              || 'BEEN ADDED' ;
474          DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;
475
476          DLINE = ' ANOTHER RUN OF THIS ROUTINE MUST BE MADE '
477              || 'TO ENTER FURTHER ADDITIONS' ;
478          DISPLAY ( DLINE ) ;
479
480          GO TO PROMPTA ;
481
482 STEP20: NREC = TOTREC + NADD ;

```

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SOURCE CARD LISTING FOR
PSB: /* INTERACTIVE SEARCH RESULTS EDITOR - WED/09/MAR/77 */

```

483 DLINE = 'THE FOLLOWING RECORD(S) HAS/HAVE BEEN ADDED...' ;
484 DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;
485
486 PUT STRING (DLINE) EDIT ( (10)' ', 'RECNO/CIN/CDP/COURSE : ',
487 NREC, '/', YECIN, '/', YECDP, '/' )
488 ( A, A, P'ZZ,ZZ9', A, A(8), A, A(4), A ) ;
489
490 IF ( YECDP = ' ' ) THEN GO TO STEP23 ;
491
492 /* HERE, THE ENTERED CDP WAS NOT BLANK, LOOK IT UP */
493
494 LOOKU = STEP21 ;
495 GO TO FINDCDP ;
496
497 STEP21: IF ( CDPREC > 0 ) THEN GO TO STEP22 ;
498 STEP21A: SUBSTR (DLINE, 55) = ' (NO MATCHING DATA)' ;
499 GO TO ADDOUT ;
500
501 STEP22: IF ( CDPREC > MAXR ) THEN GO TO ER3 ;
502
503 READ FILE (COURSE) INTO (ACRS) KEY (CDPREC) ;
504
505 SUBSTR (DLINE, 55) = CST ;
506 NDSTAT = 1 ;
507
508 GO TO ADDOUT ;
509
510 /* HERE, THE GIVEN CDP WAS BLANK ; TRY CIN LOOKUP */
511
512 STEP23: LOOKU = STEP24 ;
513 GO TO FINDCIN ;
514
515 STEP24: IF ( CINREC = 0 ) THEN GO TO STEP21A ;
516
517 ROUTEX = STEP26 ;
518
519 IF ( CINREC > MAXR ) THEN GO TO ER3 ;
520
521 STEP25: READ FILE (COURSE) INTO (ACRS) KEY (CINREC) ;
522
523 IF ( CIN = YECIN ) THEN GO TO PROMPTA ;
524
525 SUBSTR ( DLINE, 49 ) = CDP || '/' || CST ;
526 YECDP = CDP ; NCDP = CDP ;
527
528 IF ( NFIRST = 1 ) THEN
529 DO ; NFIRST = 2 ; GO TO ADDOUT ; END ;
530
531 NADD = NADD + 1 ;
532 IF ( NADD > 500 ) THEN GO TO BUMADD ;
533 NREC = TOTREC + NADD ;
534
535 PUT STRING (SUBSTR(DLINE,33,6)) EDIT (NREC) ( P'ZZ,ZZ9' ) ;
536
537 /* HERE IS THE COMMON OUTPUT ROUTINE FOR ADDITIONS */
538
539 ADDOUT: DISPLAY ( ' ' ) ;
540 DISPLAY ( DLINE ) ;
541
542 IF ( NLINE = 2 ) THEN
543 DISPLAY ( CARD ) ;
544
545 ADDS (NADD) = NEW ;
546
547 GO TO ROUTEX ; /* NORMAL ROUTE IS TO PROMPTX */
548
549 STEP26: /* HERE, FROM ROUTEX, WHEN POSSIBLY ANOTHER CIN/CDP
550 RECORD TO BE EXTRACTED */
551

```


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PAGE NUMBER : 9

SOURCE CARD LISTING FOR
P5B: /* INTERACTIVE SEARCH RESULTS EDITOR - WED/09/MAR/77 */

CINREC = CINREC + 1 ;
IF (CINREC > MAXR) THEN GO TO PROMPTA ;
ELSE GO TO STEP25 ;

/*****/

/* NOW, THE PROCESSING ENSUES FOR ADDITIONS OF VEHICLE RECORDS */

ADDVEHICLE:

ADDV: IF (MAXADD > 0) THEN GO TO BUMADD ;

ROUTEX = PROMPTA ;
NLINE = 1 ;
MAXD = REFS (8) ;
MAXR = REFS (7) ;

ROUTE = STEP27 ;
GO TO FINDASLASH ;

STEP27: YEVEH = SUBSTR (CARD, (J1 + 1), (J2 - J1 - 1)) ;
NTYP = 2 ; NSTAT = 2 ; NDSTAT = 2 ;
NID = YEVEH ;

NADD = NADD + 1 ;
IF (NADD > 500) THEN GO TO BUMADD ;
NREC = TOTREC + NADD ;

DLINE = 'THE FOLLOWING RECORD HAS BEEN ADDED...' ;
DISPLAY (' ') ; DISPLAY (DLINE) ;

PUT STRING (DLINE) EDIT ((10)' ', 'RECNO/STOCK/FILE NUM : ',
NREC, '/', YEVEH, '/') (A, A, P'ZZ,ZZ9', A, A(13), A) ;

LOOKU = STEP28 ;
GO TO FINDVEH ;

STEP28: IF (VEHREC > 0) THEN GO TO STEP29 ;
SUBSTR (DLINE, 56) = '(NO MATCHING DATA)' ;
GO TO ADDOUT ;

STEP29: IF (VEHREC > MAXR) THEN GO TO ER4 ;

READ FILE (VEHS) INTO (AVEHICLES) KEY (VEHREC) ;

SUBSTR (DLINE, 55) = DEVDESIG ;

CARD = ' ' ;
SUBSTR (CARD, 21) = DEVNAME ;
NDSTAT = 1 ;
NLINE = 2 ;

GO TO ADDOUT ;

/*****/

/* FINALLY, THE TASK ADDITION KEYBOARD ENTRY IS PURSUED */

ADDJOBTASK:

ADDJ: IF (MAXADD > 0) THEN GO TO BUMADD ;

ROUTEX = PROMPTA ;
NLINE = 1 ;
MAXD = REFS (12) ;
MAXR = REFS (11) ;

ROUTE = STEP30 ;
GO TO FINDASLASH ;

STEP30: IF (J1 * J2 * J3 * J4) = 0 THEN GO TO BUMENTRY ;

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SOURCE CARD LISTING FOR
P5B: /* INTERACTIVE SEARCH RESULTS EDITOR - WED/09/MAR/77 */

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621
622      NTP = 3 ; NSTAT = 2 ; NDSTAT = 2 ;
623      NRATE = SUBSTR ( CARD, (J1 + 1), (J2 - J1 - 1) ) ;
624      NRANK = SUBSTR ( CARD, (J2 + 1), (J3 - J2 - 1) ) ;
625      NJTASK = SUBSTR ( CARD, (J3 + 1), (J4 - J3 - 1) ) ;
626      YETASK = NID ;
627
628      NADD = NADD + 1 ;
629      IF ( NADD > 500 ) THEN GO TO BUMADD ;
630      NREC = TOTREC + NADD ;
631
632      DLINE = 'THE FOLLOWING RECORD HAS BEEN ADDED...' ;
633      DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;
634
635      PUT STRING (DLINE) EDIT
636      ( (10) ' ', 'RECNO/RATE/RANK/JOB : ', NREC,
637        ' ', NRATE, ' ', NRANK, ' ', NJTASK )
638      ( A, A, P'ZZ,ZZ9', 6 ( A ) ) ;
639
640      LOOKU = STEP31 ;
641      GO TO FINDTASK ;
642
643      STEP31: IF ( TASKREC > 0 ) THEN GO TO STEP32 ;
644              SUBSTR ( DLINE, 56 ) = '(NO MATCHING DATA)' ;
645              GO TO ADDOUT ;
646
647      STEP32: IF ( TASKREC > MAXR ) THEN GO TO ER5 ;
648
649              READ FILE (TASKS) INTO (ATASKS) KEY (TASKREC) ;
650
651              CARD = ' ' ;
652              SUBSTR ( CARD, 20 ) = TASKTTL ;
653              NSTAT = 1 ;
654              NLINE = 2 ;
655
656              GO TO ADDOUT ;
657
658      /*****/
659
660      /* THIS SUBROUTINE SEARCHES OUT THE IMBEDED SLASHES IN AN
661      ADDITION-TYPE KEYBOARD ENTRY.
662      POSSIBLE FORMATS : (1) ADDC / CIN / CDP /
663                        (2) ADDV / VEH NUM /
664                        (3) ADDJ / RATE / RANK / JOBTASK /
665      ON EXIT : J1, J2, J3, J4 SET AS REQD TO POINT TO
666                  THE RELATED '/'
667      ERROR RETURN TO BUMENTRY
668      RETURN VECTOR IS ROUTE
669
670
671      FINDASLASH:
672      J1, J2, J3, J4 = 0 ;
673      DLINE = CARD ;
674
675      J1 = INDEX (CARD, '/') ;
676      IF ( J1 = 0 ) | ( J1 > 20 ) THEN GO TO BUMENTRY ;
677      CTAB (J1) = ' ' ;
678
679      J2 = INDEX (CARD, '/') ;
680      IF ( J2 <= J1 ) | ( J2 = 0 ) THEN GO TO BUMENTRY ;
681      CTAB (J2) = ' ' ;
682
683      J3 = INDEX (CARD, '/') ;
684      IF ( J3 = 0 ) THEN GO TO SLRET ;
685      IF ( J3 <= J2 ) THEN GO TO BUMENTRY ;
686      CTAB (J3) = ' ' ;
687
688      J4 = INDEX (CARD, '/') ;
689      IF ( J4 = 0 ) THEN GO TO SLRET ;
690      IF ( J4 <= J3 ) THEN GO TO BUMENTRY ;

```

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SOURCE CARD LISTING FOR
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```

690
691 SLRET: CARD = DLINE ;
692
693         GO TO ROUTE ;
694
695 /*****
696
697  /* HERE, IS SUBROUTINE TO DETERMINE LEGALITY OF AN INPUT
698     RECORD NUMBER.
699     ON ENTRY - NUMBER TO BE VERIFIED IS IN K
700     ON EXIT  - NREC = SS TO RESULTS STRUCTURE
701               NRECA = SS TO ADDS STRUCTURE
702     ERROR EXIT TO BUMENTRY
703     RETURN VECTOR IS ROUTE
704               */
705
706 FINDREC: IF ( K <= (TOTREC + NADD) ) THEN GO TO FINDR1 ;
707
708 BUMNUMBER: DLINE = (5)' ' || '** RANGE ERROR IN RECORD NUMBER' ;
709            DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;
710            GO TO PROMPTA ;
711
712 FINDR1: IF ( K <= TOTREC )
713         THEN DO ; NREC = K ; NRECA = 0 ; END ;
714         ELSE DO ; NREC = 0 ; NRECA = K - TOTREC ; END ;
715
716         GO TO ROUTE ;
717
718 /*****
719
720  /* THIS IS THE SUBROUTINE WHICH ISOLATES THE NUMERIC
721     SINGLE/PAIRS FROM THE DELETE & PRINT KEYBOARD ENTRIES
722     ON ENTRY - NO REQUIREMENTS
723     ON EXIT  - RETURN VECTOR IS ROUTE
724               - FIRST NUMBER BIN IN N1, CHAR IN N1C
725               - 2ND NUM (IF ANY) BIN IN N2, CHAR IN N2C
726               - 2ND, IF ABSENT, N2 = 0
727               - NOS = 1 TO 2, INDICATES SING/PAIR INPUTS
728     ERROR RETURN TO PROMPTA (BAD NUM) OR BUMENTRY
729               */
730
731 FINDNOS: N1, N2 = 0 ;
732          N1C, N2C = ' ' ;
733          NCONV = 2 ;
734          NOS = 1 ;
735
736          L1 = INDEX ( CARD, ' ' ) ; /* FIND FIRST BLANK */
737
738          IF ( L1 = 0 ) | ( L1 > 20 )
739             | ( SUBSTR(CARD, L1) = ' ' )
740             THEN GO TO BUMENTRY ;
741
742 LFN1: DO L = L1 TO 80 ; /* FIND FIRST DIGIT */
743       L2 = L ;
744       IF ( CTAB(L) = ' ' ) THEN GO TO FINDN2 ;
745       END LFN1 ;
746
747       GO TO BUMENTRY ;
748
749 FINDN2: DO L = L2 TO 80 ;
750       L1 = L ;
751       IF ( CTAB(L) = ' ' ) | ( CTAB(L) = ',' )
752          THEN GO TO FINDN3 ;
753       END FINDN2 ;
754
755       GO TO BUMENTRY ;
756
757 FINDN3: N1C = SUBSTR ( CARD, L2, (L1-L2) ) ;
758        GET STRING (N1C) EDIT (N1) ( F(5) ) ;

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SOURCE CARD LISTING FOR

P58: /* INTERACTIVE SEARCH RESULTS EDITOR - WED/09/MAR/77 */

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      IF ( L1 > 79 ) THEN GO TO BUMENTRY ;
LFN2:  DO L = L1 TO 79 ;
      L2 = L ;
      IF ( CTAB(L) = ' ' ) & ( CTAB(L) = ' ' )
      THEN GO TO FINDN4 ;
      END LFN2 ;
      GO TO ROUTE ;
FINDN4: IF ( L2 > 75 ) THEN L3 = 80 ;
      ELSE L3 = L2 + 5 ;
LFN3:  DO L = L2 TO L3 ;
      L1 = L ;
      IF ( CTAB(L) = ' ' ) THEN GO TO FINDN5 ;
      END LFN3 ;
FINDN5: N2C = SUBSTR ( CARD, L2, (L1-L2) ) ;
      GET STRING (N2C) EDIT (N2) ( F(5) ) ;
      IF ( N2 < N1 ) THEN GO TO BUMENTRY ;
LFNOUT: NOS = 2 ;
      GO TO ROUTE ;
/*****/
/* DIRECTORY LOOKUP SUBROUTINES IN THIS SECTION */
DECLARE ( FLCIN, FLCDP, FLVEH, FLTASK ) BIT (1) STATIC,
      YECIN CHAR (8) STATIC,
      YECDP CHAR (4) STATIC,
      ( YETASK, YEVEH ) CHAR (13) STATIC,
      ( CINREC, CDPREC, VEHREC, TASKREC, VEHMAX, TASKMAX,
      CINMAX, CDPMAX ) FIXED BIN STATIC,
      LOOKU LABEL ;
/* CIN DIRECTORY LOOKUP SUBROUTINE
ENTRY : DESIRED CIN IN YECIN
EXIT : CINREC = 0 (NO FIND) OR REG NUMBER
RETURN VECTOR IS LOOKU */
FINDCIN: IF ( FLCIN ) THEN GO TO CIN2 ;
      CINMAX = REFS (2) ;
      FLCIN = '1'B ;
CINLOAD: DO J = 1 TO 4 ;
      PLCIN = ADDR ( COVCIN (J) ) ;
      READ FILE (DCIN) INTO (LOADCIN) ;
      END CINLOAD ;
CIN2:  DO I = 1 TO CINMAX ;
      IF ( YECIN > CHCIN(I) ) THEN GO TO ECIN2 ;
      IF ( YECIN = CHCIN(I) ) THEN GO TO NFCIN ;
      CINREC = CINPTR (I) ;
      GO TO LOOKU ;
ECIN2:  END CIN2 ;
NFCIN:  CINREC = 0 ;
      GO TO LOOKU ;
/* CDP DIRECTORY LOOKUP SUBROUTINE
ENTRY : DESIRED CDP IN YECDP
EXIT : CDPREC = 0 (NO FIND), OR REC NUMBER
RETURN VECTOR IS LOOKU */

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SOURCE CARD LISTING FOR
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828 FINDCDP: IF ( FLCDP ) THEN GO TO CDP2 ;
829
830     CDPMAX = REFS (3) ;
831     FLCDP = '1'B ;
832
833 CDPLOAD:    DO J = 1 TO 4 ;
834             PLCDP = ADDR ( COVCDP (J) ) ;
835             READ FILE (DCDP) INTO (LOADCDP) ;
836             END CDPLOAD ;
837
838 CDP2:       DO I = 1 TO CDPMAX ;
839             IF ( YECDP > CHCDP(I) ) THEN GO TO ECDP2 ;
840             IF ( YECDP = CHCDP(I) ) THEN GO TO NFCDP ;
841             CDPREC = CDPTR(I) ;
842             GO TO LOOKU ;
843
844 ECDP2:      END CDP2 ;
845
846 NFCDP:     CDPREC = 0 ;
847             GO TO LOOKU ;
848
849 /* VEHICLE ID LOOKUP SUBROUTINE
850 ENTRY : DESIRED VEH ID IN YEVEH
851 EXIT  : VEHREC = 0 (NO FIND), OR REC NUMBER
852 RETURN VECTOR IS LOOKU */
853
854 FINDVEH: IF ( FLVEH ) THEN GO TO VEH2 ;
855
856     VEHMAX = REFS (8) ;
857     FLVEH = '1'B ;
858
859 VEHLOAD:    DO J = 1 TO 4 ;
860             PLVEH = ADDR ( COVVEH (J) ) ;
861             READ FILE (DVEH) INTO (LOADVEH) ;
862             END VEHLOAD ;
863
864 VEH2:       DO I = 1 TO VEHMAX ;
865             IF ( YEVEH > CHVEH(I) ) THEN GO TO EVEH2 ;
866             IF ( YEVEH = CHVEH(I) ) THEN GO TO NFVEH ;
867             VEHREC = VEHPTTR (I) ;
868             GO TO LOOKU ;
869
870 EVEH2:      END VEH2 ;
871
872 NFVEH:     VEHREC = 0 ;
873             GO TO LOOKU ;
874
875 /* TASK ID DIRECTORY LOOKUP SUBROUTINE
876 ENTRY : DESIRED TASK ID (13-CHAR) IN YETASK
877 EXIT  : TASKREC = 0 (NO FIND) OR REC NUMBER
878 RETURN VECTOR IS LOOKU */
879
880 FINDTASK: IF ( FLTASK ) THEN GO TO TASK2 ;
881
882     TASKMAX = REFS (12) ;
883     FLTASK = '1'B ;
884
885 TASKLOAD:    DO J = 1 TO 12 ;
886             PLTASK = ADDR ( COVTASK (J) ) ;
887             READ FILE (DTASK) INTO (LOADTASK) ;
888             END TASKLOAD ;
889
890 TASK2:       DO I = 1 TO TASKMAX ;
891             IF ( YETASK > CHTASK(I) ) THEN GO TO ETASK2 ;
892             IF ( YETASK = CHTASK(I) ) THEN GO TO NFTASK ;
893             TASKREC = TASKPTR (I) ;
894             GO TO LOOKU ;
895
896 ETASK2:      END TASK2 ;
897
898 NFTASK:     TASKREC = 0 ;

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SOURCE CARD LISTING FOR

P5B: /* INTERACTIVE SEARCH RESULTS EDITOR - WED/09/MAR/77 */

GO TO LOOKU ;

/* **** */

/* TERMINAL, IE, CATASTROPHIC BADNESSES REPORTED HERE */

BUSTED: PUT STRING (CARD) EDIT ((10)' ', '** ERROR NUMBER ',
NER, ' HAS OCCURED **')
(A, A, F(2), A) ;

DISPLAY (' ') ; DISPLAY (CARD) ;
DISPLAY (' ') ; DISPLAY (DLINE) ;

/* **** */

/* HERE, REE RESULTS PROJECT FILE IS COMPOSED FROM THE INPUT
RESULTS ARRAY AND ANY ADDS ARRAY ENTRIES */

QUIT: OPEN FILE (RESU) RECORD OUTPUT;
FILE (REE) RECORD OUTPUT ;

RELOADR: DO J = 1 TO TOTREC ;
S16 = RESREC (J) ;
WRITE FILE (RESU) FROM (S16) ;
IF (RSTAT(J) = 3) THEN GO TO ELOADR ;
WRITE FILE (REE) FROM (S16) ;
NEE = NEE + 1 ;

ELOADR: END RELOADR ;
IF (NADD <= 0) THEN GO TO EOJ ;

RELOADA: DO J = 1 TO NADD ;
IF (MSTAT(J) = '3') | (MTYP(J) = '0')
THEN GO TO ERLOADA ;
NEW = ADDS (J) ;
WRITE FILE (RESU) FROM (NEW) ;
WRITE FILE (REE) FROM (NEW) ;
NEE = NEE + 1 ;

ERLOADA: END RELOADA ;
GO TO EOJ ;

/* **** */

/* HERE WE ARE AT THE LAST ROUNDUP */

EOJ: DLINE = '** ROE SEARCH RESULTS EDITOR IS TERMINATING' ;
DISPLAY (' ') ; DISPLAY (DLINE) ;
PUT STRING (DLINE) EDIT (' TOTAL RECORDS ADDED : ', NADD)
(A, F(3)) ;
DISPLAY (' ') ; DISPLAY (DLINE) ;
PUT STRING (DLINE) EDIT (' TOTAL RECORDS IN PROJECT EXTRACT FILE : ',
NEE) (A, P'Z,ZZ9') ;
DISPLAY (' ') ; DISPLAY (DLINE) ;
CLOSE FILE (MREF), FILE (ID),
FILE (COURSE), FILE (DCIN), FILE (DCDP),
FILE (VEHS), FILE (DVEH),
FILE (TASKS), FILE (DTASK),
FILE (RESU), FILE (REE) ;

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SOURCE CARD LISTING FOR
P5B: /* INTERACTIVE SEARCH RESULTS EDITOR - WED/09/MAR/77 */

966
967

END P5B ;

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SOURCE CARD LISTING FOR
P5C: /* PRINT OF ROE SEARCH RESULTS FOR EXTRACT - FRI/11/MAR/77 */P5C: /* PRINT OF ROE SEARCH RESULTS FOR EXTRACT - FRI/11/MAR/77 */
PROC (INPARM) OPTIONS (MAIN) ;/* REVISIONS :
FRI/11/MAR/77 - VERYFIRST IMPLEMENTATION.
- NOTE: THIS IS A PERMUTATION OF PSA.*/
THU/24/MAR/77 - MODS PRIOR TO TRANSMIT TO NCSS.DECLARE DLINE8 CHAR (8) DEF DLINE POS (8),
DLINECST CHAR (36) DEF DLINE POS (34),
DLINE28 CHAR (4) DEF DLINE POS (28),
DLINE33 CHAR (36) DEF DLINE POS (33),
DLINE36 CHAR (36) DEF DLINE POS (36),
DLINE40 CHAR (40) DEF DLINE POS (40),
CARD7 CHAR (70) DEF CARD POS (8),MODIR CHAR (35) STATIC INIT
('** DIRECTORY SEARCH WAS NEGATIVE **'),NOAB CHAR (36) STATIC INIT
('(NO ABBREVIATED FILE DATA AVAILABLE)') ;DECLARE 1 TTLCARD STATIC, /* PROJECT TITLE DATA BASE */
2 PNAME CHAR (10), /* CKF.ID */
2 PTTL CHAR (70),INPARM CHAR (100) VARYING,
1 POVER BASED (PP),
2 PARM2 CHAR (4),(DISP, PTR, DPAGE, I, J, K, L, LT, NC, NFIRST,
NV, NPAGE, NR, NTYPE, NV, NER, NLINE,
NDF, NJ) FIXED BIN STATIC,DTTL CHAR (23) STATIC INIT
(' PAGE NUMBER : XXXX'),
DDPGE PICTURE 'Z229' DEF DTTL POS (20),

MAXLTB FIXED BIN STATIC INIT (60) ;

DECLARE (COURSE, VEHS, TASKS
) FILE RECORD DIRECT KEYED ENV (REGIONAL(1)) ;DECLARE (CARD, DLINE) CHAR (80) STATIC,
C110 CHAR (10) DEF CARD,
C1180 CHAR (70) DEF CARD POS (11) ;DECLARE 1 MAST STATIC,
2 REFS (40) FIXED BIN,1 RESULT BASED (PR),
2 RTYP PICTURE '9',
2 RSTAT PICTURE '9',
2 ROSTAT PICTURE '9',
2 RESID CHAR (13),1 RESC BASED (PR),
(2 F1, 2 F2, 2 F3) CHAR (1),
2 RESCIN CHAR (8),
2 RESCOP CHAR (4),1 REST BASED (PR),
(2 F1, 2 F2, 2 F3) CHAR (1),
2 RATE CHAR (5),
2 RANK CHAR (2),
2 JOBTASK CHAR (6),

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SOURCE CARD LISTING FOR
P5C: /* PRINT OF ROE SEARCH RESULTS FOR EXTRACT - FRI/11/MAR/77 */

```

69          S16          CHAR (16) STATIC,
70          V1 (3)        LABEL ;
71
72 DECLARE T1          CHAR (32) STATIC INIT (
73 'RECNO'   CIN      CDP      'COURSE' ),
74
75          T1U          CHAR (37) STATIC INIT (
76 '-----' '-----' '-----' ),
77
78          T2          CHAR (46) STATIC INIT (
79 'RECNO'   STOCK NUMBER FILE NUM 'TRAINING DEVICE' ),
80
81          T2U          CHAR (46) STATIC INIT (
82 '-----' '-----' '-----' ),
83
84          T3          CHAR (29) STATIC INIT (
85 'RECNO'   RATE   RANK   JOB   'TASK' ),
86
87          T3U          CHAR (29) STATIC INIT (
88 '-----' '-----' '-----' ),
89
90 DECLARE WINDUPS (6)  CHAR (44) STATIC INIT (
91          : TOTAL NUMBER COURSE RECORDS PROCESSED : ,
92          : TOTAL NUMBER VEHICLE RECORDS PROCESSED : ,
93          : TOTAL NUMBER JOBTASK RECORDS PROCESSED : ,
94          : TOTAL NUMBER ROE RESULT RECORDS READ : ,
95          : RECORDS WITHOUT MATCHING ABBREVIATED DATA : ,
96          : TOTAL NUMBER DIRECTORY SEARCH FAILURES : ),
97
98          WIND (6)     FIXED BIN STATIC ;
99
100
101 /*****
102
103 DECLARE 1 ACRS          STATIC,          /* ABBR. COURSE FILE */
104          2 SET1,          /* CKF.ACOURSES */
105          3 CDP          CHAR (4),
106          3 CIN          CHAR (8),
107          3 CST          CHAR (16),
108          3 NOBC          CHAR (4),
109          3 VEC          CHAR (4),
110          2 PC          CHAR (2),
111          2 SET2,
112          3 RMS          CHAR (3),
113          3 TYCRS          CHAR (2),
114          3 SVC          CHAR (1),
115          3 MI          CHAR (1),
116          2 STCD          CHAR (1),
117          2 STDE          PICTURE '(5)9',
118          2 SET3,
119          3 TRAPS          CHAR (1),
120          3 TPC          CHAR (5),
121          2 ATTR          PICTURE '99V9',
122          2 STBK          PICTURE '99V9',
123          2 CLEN          PICTURE '999',
124          2 THRS          PICTURE '999',
125          2 LHR          PICTURE '999',
126          2 CAJB          PICTURE '(5)9V99',
127          2 CC80          CHAR (1) ;
128
129 DECLARE 1 CINDER (304) STATIC,          /* CRS CIN DIRECTORY */
130          2 CHCIN          CHAR (8),          /* CKF.CRS.DIRCIN */
131          2 CINPTR          FIXED BIN,
132
133          LOADCIN          CHAR (760) BASED (PLCIN),
134          COVCIN (4)        CHAR (760) BASED (PTCIN) ;
135
136 DECLARE 1 CDPDIR (1200) STATIC,          /* CRS CDP DIRECTORY */
137          2 CHCDP          CHAR (4),          /* CKF.CRS.DIRCDP */

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SOURCE CARD LISTING FOR
P5C: /* PRINT OF ROE SEARCH RESULTS FOR EXTRACT - FRI/11/MAR.7

2 CDPTR FIXED BIN,

LOADCDP CHAR (1200) BASED (PLCDP),
COVCDP (6) CHAR (1200) BASED (PTCDP);

/*****/

DECLARE 1 AVEHICLES STATIC, /* ABBR. VEH FILE */
2 STJCKN CHAR (13), /* CKF.AVEHS */
2 DEVDESIG CHAR (9),
2 DEVNAME CHAR (47),
2 DEVPOST PICTURE '(8)9V99',
2 CC80 CHAR (1),

VPOST FIXED DEC (10,2) STATIC,
VOVER CHAR (80) BASED (PV80);

DECLARE 1 VEHDIR (200) STATIC, /* VEHICLE DIRECTORY */
2 CHVEH CHAR (13), /* CKF.VEH.DIR */
2 VEHPTX FIXED BIN,

COVVEH (4) CHAR (750) BASED (PTVEH),
LOADVEH CHAR (750) BASED (PLVEH);

/*****/

DECLARE 1 ATASKS STATIC, /* ABBR. TASK FILE */
2 RATING CHAR (7), /* CKF.ATASKS */
2 JOBTASK CHAR (6),
2 TASKTTL CHAR (50),
2 FILL CHAR (6),
2 BILCOST PICTURE '(8)9V99',
2 CC80 CHAR (1);

DECLARE 1 TASKDIR (1200) STATIC, /* JOBTASK FILE DIRECTORY */
2 CHTASK CHAR (13), /* CKF.TASKS.DIR */
2 TASKPTR FIXED BIN,

COVTASK (12) CHAR (1500) BASED (PTTASK),
LOADTASK CHAR (1500) BASED (PLTASK);

/*****/

START: NTYPE, NC, NJ, NV, NR, NN, NOF,
NPAGE, DPAGE, LT, NFIRST,
J, K = 0;

FLCIN, FLCDP, FLVEH, FLTASK = '0'B;

PP = ADDR (INPAM);
PR = ADDR (S16);
PTCIN = ADDR (CINDER);
PTCDP = ADDR (CDPDIR);
PV80 = ADDR (AVEHICLES);
PTVEH = ADDR (VEHDIR);
PTTASK = ADDR (TASKDIR);

COMMENCE:

OPEN FILE (MREF) RECORD INPUT,
FILE (ID) RECORD INPUT,
FILE (COURSE) INPUT,
FILE (DCIN) RECORD INPUT,
FILE (DCDP) RECORD INPUT,
FILE (VEHS) INPUT,
FILE (DVEH) RECORD INPUT,
FILE (TASKS) INPUT,
FILE (DTASK) RECORD INPUT,
FILE (REE) RECORD INPUT;

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SOURCE CARD LISTING FOR
P5C: /* PRINT OF ROE SEARCH RESULTS FOR EXTRACT - FRI/11/MAR/77 .ON ENDFILE (REE) GO TO EOJ ;
READ FILE (MREF) INTO (MAST) ;

/*****

/* HERE, DEVICE ASSIGNMENTS ARE VERIFIED */

FIRST: DISP, PTR = 1 ;
IF (PARM2 = 'BOTH') THEN GO TO STEPA ;IF (PARM2 = 'TERM')
THEN PTR = 2 ;
ELSE DISP = 2 ;IF (PARM2 = 'NONE')
THEN PTR, DISP = 1 ;

/* HERE, PRINTER DATASET IS INITIALIZED */

STEPA: IF (PTR = 2) THEN GO TO STEPB ;
OPEN FILE (SYSPRINT)
LINE SIZE (120) PAGE SIZE (60) ;

ON ENDPAGE (SYSPRINT)

BEGIN ;
NPAGE = NPAGE + 1 ;IF (NFIRST = 1) THEN
DO ; PUT PAGE LINE (5) ; GO TO TSTTTL ; END ;
PUT SKIP (3) ;
NFIRST = 1 ;TSTTTL: IF (NTYPE = 3) THEN GO TO TASKTTL ;
IF (NTYPE = 2) THEN GO TO VEHTTL ;CRSTTL: PUT EDIT ('*** EXTRACT DATA IS REQUESTED FOR THE FOLLOWING COURSES ***',
'PAGE NUMBER : ', NPAGE, 'RECORD',
'NUM ORIGIN CIN CDP COURSE TITLE',
'-----',
' (X(9), A, SKIP(2), X(9), A, F(3),
SKIP(2), X(4), A, 3 (SKIP(1), A)) ;
GO TO SKP ;VEHTTL: PUT EDIT ('*** EXTRACT DATA IS REQUESTED FOR THE FOLLOWING VEHICLES ***',
'PAGE NUMBER : ', NPAGE, 'RECORD', 'DEVICE',
'NUM ORIGIN STOCK NUMBER DESIGNATOR',
'-----',
' (X(9), A, SKIP(2), X(9), A, F(3),
SKIP(2), X(4), A, COL(35), A, 3 (SKIP(1), A)) ;
GO TO SKP ;TASKTTL: PUT EDIT ('*** EXTRACT DATA IS REQUESTED FOR THE FOLLOWING JOBS / TASKS ***',
'PAGE NUMBER : ', NPAGE, 'RECORD',
'NUM ORIGIN RATING RANK JOBTASK',
'-----',
' (X(9), A, SKIP(2), X(9), A, F(3),
SKIP(2), X(4), A, 3 (SKIP(1), A)) ;SKP: PUT SKIP (1) ;
END ;

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SOURCE CARD LISTING FOR
ISC: /* PRINT OF ROE SEARCH RESULTS FOR EXTRACT - FRI/11/MAR/77

/* HERE, INITIALIZATION OF TERMINAL DATASET PROCEEDS */

STEP3: IF (DISP = 2) THEN GO TO STEP4 ;

ON CONDITION (NEWDP)

BEGIN ;

IF (LT < 61) THEN LT = 61 ;

IF (LT >= 66) THEN GO TO LPB ;

IF (LT < 61) THEN LT = 61 ;

LPA: DO L = LT TO 66 ;
DISPLAY (' ') ;
END LPA ;

LPB: DISPLAY (' ') ;

DPAGE = DPAGE + 1 ;

DDPAGE = DPAGE ;

DISPLAY (DTTL) ;

DISPLAY (' ') ;

LT = 3 ;

END ;

/* NOW, MASTER TITLE STRIP IS OUTPUT */

STEP4: READ FILE (ID) INTO (CARD) ;

DLINE = (10)' ' || '** EXTRACT SEARCH RESULTS FOR PROJECT - '

|| C110 || '** ;

CARD = (12)' ' || C1180 ;

DISPLAY (' ') ; DISPLAY (DLINE) ;

DISPLAY (CARD) ; DISPLAY (' ') ;

/* DISPLAY OUTPUT GOES HERE */

IF (PTR = 2) THEN GO TO RD1 ;

PUT EDIT (DLINE, CARD) (SKIP(3), A, SKIP(1), A) ;

GO TO RD1 ;

/*****

/* HEREIN, IS START OF MAINLINE LOOP */

RD1: READ FILE (REE) INTO (S16) ;

NR = NR + 1 ;

IF (RTYPE = NTYPE) THEN GO TO STEP1 ;

NTYPE = RTYPE ;

IF (PTR = 1) THEN SIGNAL ENDPAGE (SYSPRINT) ;

IF (DISP = 1) THEN SIGNAL CONDITION (NEWDP) ;

STEP1: GO TO V1 (NTYPE) ;

/* HERE, A COURSE RECORD IS PROCESSED */

V1(1): NC = NC + 1 ;

NLINE = 1 ;

DLINE = ' ' ;

PUT STRING (DLINE) EDIT (NR, RESCIN, RESCDP)
(P'Z,ZZ9', X(12), A, X(2), A) ;ER1: IF (RSTAT = 1) | (RSTAT = 2) THEN GO TO STP1 ;
NER = 1 ;

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SOURCE CARD LISTING FOR
PSC: /* PRINT OF ROE SEARCH RESULTS FOR EXTRACT - FRI/11/MAR/77 */

```

345 PJT STRING (DLINE) DATA ( NR, S16 ) ;
346 GO TO BUSTED ;
347
348 STP1: IF ( RSTAT = 1 ) THEN DLINE8 = 'ORIGINAL' ;
349 ELSE DLINE8 = ' ADDED' ;
350
351 IF ( RESCDP = ' ' ) THEN DLINE28 = 'NONE' ;
352
353 IF ( ROSTAT = 2 ) | ( RESCDP = ' ' ) THEN
354 NOCDATA: DO ;
355 NV = NN + 1 ;
356 DLINECST = NOAB ;
357 GO TO OUTLOOP ;
358 END NOCDATA ;
359
360 YECDP = RESCDP ;
361 LOOKU = STEP2 ;
362 GO TO FINDCDP ;
363
364 STEP2: IF ( CDPREC = 0 ) THEN
365 LP1: DO ;
366 NDF = NDF + 1 ;
367 DLINECST = NODIR ;
368 GO TO OUTLOOP ;
369 END LP1 ;
370
371 READ FILE (COURSE) INTO (ACRS) KEY (CDPREC) ;
372
373 DLINECST = CST ;
374
375 GO TO OUTLOOP ;
376
377 /* HERE, VEHICLE TYPE RECORDS ARE PROCESSED */
378
379 V1(2): NV = NV + 1 ;
380 NLINE = 1 ;
381
382 DLINE = ' ' ;
383 PUT STRING (DLINE) EDIT ( NR, RESID )
384 ( 'P'Z,ZZ9', X(12), A(13) ) ;
385
386 IF ( RSTAT = 1 ) | ( RSTAT = 2 ) THEN GO TO STP2 ;
387 ELSE GO TO ER1 ;
388
389 STP2: IF ( RSTAT = 1 ) THEN DLINE8 = 'ORIGINAL' ;
390 ELSE DLINE8 = ' ADDED' ;
391
392 IF ( ROSTAT = 2 ) THEN
393 NOVDATA: DO ;
394 NV = NN + 1 ;
395 DLINE33 = NOAB ;
396 GO TO OUTLOOP ;
397 END NOVDATA ;
398
399 YEVEH = RESID ;
400 LOOKU = STEP3 ;
401 GO TO FINDVEH ;
402
403 STEP3: IF ( VEHREC = 0 ) THEN
404 LP2: DO ;
405 NDF = NDF + 1 ;
406 DLINE36 = NODIR ;
407 GO TO OUTLOOP ;
408 END LP2 ;
409
410 READ FILE (VEHS) INTO (AVEHICLES) KEY (VEHREC) ;
411
412 DLINE33 = DEVDESIG ;
413 CARD = ' ' ;

```

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SOURCE CARD LISTING FOR
P5C: /* PRINT OF ROE SEARCH RESULTS FOR EXTRACT - FRI/11/MAR/77 */

```

414      CARD7 = DEVNAME ;
415      NLINE = 2 ;
416
417      GO TO OUTLOOP ;
418
419      /* NOW, PROCESS A TASK RECORD HERE */
420
421      V1(3): NJ = NJ + 1 ;
422      NLINE = 1 ;
423
424      DLINE = ' ' ;
425      PUT STRING (DLINE) EDIT ( NR, RATE, RANK, REST.JOBTASK )
426      ( 'P'2,229', X(12), A, X(4), A, X(3), A ) ;
427
428      IF ( RSTAT = 1 ) THEN GO TO STP3 ;
429      IF ( RSTAT = 2 ) THEN GO TO STP4 ;
430      GO TO ER1 ;
431
432      STP3: DLINE8 = 'ORIGINAL' ;
433           GO TO STP5 ;
434      STP4: DLINE8 = 'ADDED' ;
435
436      STP5: IF ( RDSTAT = 2 ) THEN
437      NOTDATA: DO ;
438              NV = NV + 1 ;
439              DLINE40 = NOAB ;
440              GO TO OUTLOOP ;
441      END NOTDATA ;
442
443      YETASK = RESID ;
444      LOOKU = STEP4 ;
445      GO TO FINDTASK ;
446
447      STEP4: IF ( TASKREC = 0 ) THEN
448      LP3: DO ;
449              NDF = NDF + 1 ;
450              DLINE40 = MODIR ;
451              GO TO OUTLOOP ;
452      END LP3 ;
453
454      READ FILE (TASKS) INTO (ATASKS) KEY (TASKREC) ;
455
456      CARD = ' ' ;
457      CARD7 = TASKTTL ;
458      NLINE = 2 ;
459
460      GO TO OUTLOOP ;
461
462      /* HERE IS THE PRINTED LINE OUTPUT SEQUENCE */
463
464      OUTLOOP: IF ( PTR = 1 )
465      THEN PUT LIST (DLINE) SKIP (2) ;
466
467      IF ( PTR = 1 ) & ( NLINE = 2 )
468      THEN PUT LIST ( CARD ) SKIP (1) ;
469
470      IF ( DISP = 2 ) THEN GO TO RD1 ;
471
472      IF ( LT > MAXLTB ) THEN SIGNAL CONDITION (NEWDP) ;
473
474      DISPLAY ( DLINE ) ;
475      LT = LT + 1 ;
476
477      IF ( NLINE = 2 ) THEN GO TO RD1 ;
478      DISPLAY ( CARD ) ;
479      LT = LT + 1 ;
480
481      GO TO RD1 ;
482

```

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SOURCE CARD LISTING FOR
P5C: /* PRINT OF ROE SEARCH RESULTS FOR EXTRACT - FRI/11/MAR/77 */

```

483  /*****
484
485  DECLARE ( FLCIN, FLCDP, FLVEH, FLTASK )      BIT (1) STATIC,
486          YECIN      CHAR (8) STATIC,
487          YECDP      CHAR (4) STATIC,
488          ( YETASK, YEVEH ) CHAR (13) STATIC,
489          ( CINREC, CDPREC, VEHREC, TASKREC, VEHMAX, TASKMAX,
490            CINMAX, CDPMAX ) FIXED BIN STATIC,
491          LOOKU      LABEL ;
492
493  /* CIN DIRECTORY LOOKUP SUBROUTINE
494
495          ENTRY : DESIRED CIN IN YECIN
496          EXIT  : CINREC = 0 (NO FIND) OR REG NUMBER
497          RETURN VECTOR IS LOOKU      */
498
499  FINDCIN: IF ( FLCIN ) THEN GO TO CIN2 ;
500
501          CINMAX = REFS (2) ;
502          FLCIN = '1'B ;
503
504  CINLOAD: DO J = 1 TO 4 ;
505          PLCIN = ADDR ( COVCIN (J) ) ;
506          READ FILE (DCIN) INTO (LOADCIN) ;
507          END CINLOAD ;
508
509  CIN2: DO I = 1 TO CINMAX ;
510          IF ( YECIN ^= CHCIN(I) ) THEN GO TO ECIN2 ;
511          CINREC = CINPTR (I) ;
512          GO TO LOOKU ;
513
514  ECIN2: END CIN2 ;
515
516  NFCIN: CINREC = 0 ;
517          GO TO LOOKU ;
518
519  /* CDP DIRECTORY LOOKUP SUBROUTINE
520          ENTRY : DESIRED CDP IN YECDP
521          EXIT  : CDPREC = 0 (NO FIND), OR REC NUMBER
522          RETURN VECTOR IS LOOKU      */
523
524  FINDCDP: IF ( FLCDP ) THEN GO TO CDP2 ;
525
526          CDPMAX = REFS (3) ;
527          FLCDP = '1'B ;
528
529  CDPLOAD: DO J = 1 TO 4 ;
530          PLCDP = ADDR ( COVCDP (J) ) ;
531          READ FILE (DCDP) INTO (LOADCDP) ;
532          END CDPLOAD ;
533
534  CDP2: DO I = 1 TO CDPMAX ;
535          IF ( YECDP ^= CHCDP(I) ) THEN GO TO ECDP2 ;
536          CDPREC = CDPPTR(I) ;
537          GO TO LOOKU ;
538
539  ECDP2: END CDP2 ;
540
541  NFCDP: CDPREC = 0 ;
542          GO TO LOOKU ;
543
544  /* VEHICLE ID LOOKUP SUBROUTINE
545          ENTRY : DESIRED VEH ID IN YEVEH
546          EXIT  : VEHREC = 0 (NO FIND), OR REC NUMBER
547          RETURN VECTOR IS LOOKU      */
548
549  FINDVEH: IF ( FLVEH ) THEN GO TO VEH2 ;
550
551          VEHMAX = REFS (8) ;
552          FLVEH = '1'B ;

```

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SOURCE CARD LISTING FOR
P5C: /* PRINT OF ROE SEARCH RESULTS FOR EXTRACT - FRI/11/MAR/77 */

```

552 VEHLOAD: DO J = 1 TO 4 ;
553          PLVEH = ADDR ( COVVEH (J) ) ;
554          READ FILE (DVEH) INTO (LOADVEH) ;
555          END VEHLOAD ;
556
557 VEH2: DO I = 1 TO VEHMAX ;
558       IF ( YEVEH = CHVEH(I) ) THEN GO TO EVEH2 ;
559       VEHREC = VEHPTN (I) ;
560       GO TO LOOKU ;
561
562 EVEH2: END VEH2 ;
563
564 NFVEH: VEHREC = 0 ;
565       GO TO LOOKU ;
566
567 /* TASK ID DIRECTORY LOOKUP SUBROUTINE
568 ENTRY : DESIRED TASK ID (13-CHAR) IN YETASK
569 EXIT : TASKREC = 0 (NO FIND) OR REC NUMBER
570 RETURN VECTOR IS LOOKU */
571
572 FINDTASK: IF ( FLTASK ) THEN GO TO TASK2 ;
573
574          TASKMAX = REFS (12) ;
575          FLTASK = '1'B ;
576
577 TASKLOAD: DO J = 1 TO 12 ;
578          PLTASK = ADDR ( COVTASK (J) ) ;
579          READ FILE (DTASK) INTO (LOADTASK) ;
580          END TASKLOAD ;
581
582 TASK2: DO I = 1 TO TASKMAX ;
583       IF ( YETASK = CHTASK(I) ) THEN GO TO ETASK2 ;
584       TASKREC = TASKPTR (I) ;
585       GO TO LOOKU ;
586
587 ETASK2: END TASK2 ;
588
589 NFTASK: TASKREC = 0 ;
590       GO TO LOOKU ;
591
592 /* IF GET HERE, PROGRAM IS TERRIBLE BROKE */
593
594 BUSTED: PUT STRING (CARD) EDIT
595          ( ' ** ERROR NUMBER ', NER, ' HAS OCCURED **' )
596          ( A, F(2), A ) ;
597
598          IF ( PTR = 1 ) THEN PUT EDIT ( CARD, DLINE )
599          ( SKIP(3), A, SKIP(2), A ) ;
600
601          DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;
602          DISPLAY ( ' ' ) ; DISPLAY ( CARD ) ;
603
604 /******
605
606 /* HERE IS EOF WINDUP PROCESSING */
607
608 EOJ:
609 EOF: WIND(1) = NC ; WIND(2) = NV ;
610      WIND(3) = NJ ; WIND(4) = NR ;
611      WIND(5) = NN ; WIND(6) = NDF ;
612
613      IF ( PTR = 1 ) THEN PUT SKIP (3) ;
614
615      DISPLAY ( ' ' ) ;
616      DISPLAY ( '** NOW AT EOF ON SEARCH RESULTS FILE **' ) ;
617      DISPLAY ( ' ' ) ;
618
619 SUMMARY: DO J = 1 TO 6 ;
620

```


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SOURCE CARD LISTING FOR

P5C: /* PRINT OF ROE SEARCH RESULTS FOR EXTRACT - FRI/11/MAR/77 */

```
621      PUT STRING (DLINE) EDIT
622      ( WINDUPS(J), WIND(J) ) ( A(44), P'ZZ,ZZ9' ) ;
623
624      IF ( PTR = 1 )
625      THEN PUT LIST ( (10)' ' || DLINE ) SKIP (1) ;
626
627      DISPLAY ( DLINE ) ;
628
629      END SUMMARY ;
630
631      CLOSE FILE (MREF), FILE (ID), FILE (REE),
632      FILE (COURSE), FILE (DCOP),
633      FILE (VEHS), FILE (DVEH),
634      FILE (TASKS), FILE (DTASK) ;
635
636      IF ( PTR = 1 ) THEN CLOSE FILE (SYSPRINT) ;
637
638      DISPLAY ( ' ' ) ;
639      END P5C ;
```

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SOURCE CARD LISTING FOR
P7: /* ABBREVIATED COURSE FILE DIRECTORY CONSTRUCT - 12/14/76 */

```

1 P7: /* ABBREVIATED COURSE FILE DIRECTORY CONSTRUCT - 12/14/76 */
2 PROC (INPARM) OPTIONS (MAIN) ;
3
4 /* REVISIONS :
5 TUE/14/DEC/76 - VERYFIRST IMPLEMENTATION.
6
7 MON/14/MAR/77 - MODS TO PREPARE FOR SHIP TO NCSS.
8 */
9
10 DECLARE INPARM CHAR (100) VARYING,
11 PARM CHAR (1) BASED (PP),
12 DLINE CHAR (80) STATIC,
13 YECIN CHAR (8)
14 STATIC INIT ( 'ABCDEFGH' ) ;
15
16 DECLARE ( N15, N35, N15R, NS, TOTCIN, TOTCDP, T35, LOOP, NT,
17 NC,
18 NFP, NER, J ) FIXED BIN STATIC ;
19
20 DECLARE COURSE FILE RECORD INPUT,
21 DCIN FILE RECORD OUTPUT,
22 DCDP FILE RECORD OUTPUT ;
23
24 DECLARE IHESRTD ENTRY
25 ( CHAR (44), CHAR (27),
26 FIXED BIN (31,0), FIXED BIN (31,0),
27 ENTRY, ENTRY ) ;
28 IHESARC ENTRY ( FIXED BIN (31,0) ),
29 E15A ENTRY RETURNS ( CHAR (11) ),
30 E35A ENTRY,
31 RCODE FIXED BIN (31,0) ;
32
33 DECLARE RSORT CHAR (20) STATIC,
34
35 1 SORTREC BASED (PSR),
36 2 STYPE CHAR (1),
37 2 DFLD1 CHAR (4),
38 2 DFLD2 CHAR (4),
39 2 RECPTR FIXED BIN,
40
41 1 OVERD BASED (POD),
42 2 F1 CHAR (8),
43 2 F2 FIXED BIN,
44
45 1 OVERC BASED (POC),
46 2 F1 CHAR (4),
47 2 F2 FIXED BIN ;
48
49 DECLARE 1 ACRS STATIC, /* ABBR. COURSE FILE */
50 2 SET1, /* CKF.ACOURSES */
51 3 CDP CHAR (4),
52 3 CCIN CHAR (8),
53 3 CST CHAR (16),
54 3 VOBC CHAR (4),
55 3 NEC CHAR (4),
56 2 PC CHAR (2),
57 2 SET2,
58 3 RMS CHAR (3),
59 3 TYCRS CHAR (2),
60 3 SVC CHAR (1),
61 3 MI CHAR (1),
62 2 STCD CHAR (1),
63 2 STDTE PICTURE '(5)9',
64 2 SET3,
65 3 TRAPS CHAR (1),
66 3 TPC CHAR (5),
67 2 ATTR PICTURE '99V9',
68 2 STBK PICTURE '99V9',

```

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SOURCE CARD LISTING FOR
P7: /* ABBREVIATED COURSE FILE DIRECTORY CONSTRUCT - 12/14/76 */

```

69      2 CLEN      PICTURE '999';
70      2 THRS      PICTURE '999';
71      2 LHRS      PICTURE '999';
72      2 CAOB      PICTURE '(5)9V99';
73      2 CC80      CHAR (1) ;
74
75  DECLARE 1 CINDER (304) STATIC,          /* CRS CIN DIRECTORY */
76          2 CHCIN  CHAR (8),              /* CKF.CRS.DIRCIN */
77          2 CINPTR  FIXED BIN,
78          LOADCIN  CHAR (760)  BASED (PLCIN),
79          COVCIN (4)  CHAR (760)  BASED (PTCIN) ;
80
81  DECLARE 1 CDPDIR (1200) STATIC,          /* CRS CDP DIRECTORY */
82          2 CHCDP  CHAR (4),              /* CKF.CRS.DIRCOP */
83          2 CDPPTR  FIXED BIN,
84          LOADCDP  CHAR (1200) BASED (PLCDP),
85          COVCDP (6)  CHAR (1200) BASED (PTCDP) ;
86
87  DECLARE 1 MAST  STATIC,
88          2 REFS (40)  FIXED BIN,
89          CARD  CHAR (80)  STATIC,
90          MREF  FILE RECORD UPDATE ;
91
92  /*****/
93
94  /* MASTER INITIALIZATION DONE HERE, ONE TIME */
95
96  START:  PP = ADDR (INPARM) ;
97          PTCIN = ADDR (CINDER) ;
98          PTCDP = ADDR (CDPDIR) ;
99
100         PSR = ADDR (RSORT) ;
101         POC = ADDR (DFLD2) ;
102         POD = ADDR (DFLD1) ;
103
104         CHCIN = ' ' ; CHCDP = ' ' ;
105         CINPTR = 0 ; CDPPTR = 0 ;
106
107         N15, N35, N15R, NS, TOTCIN, TOTCDP, NT,
108         NER = 0 ;
109         T35, LOOP = 1 ;
110         NC = -1 ;
111
112         OPEN FILE (MREF) RECORD UPDATE ;
113         READ FILE (MREF) INTO (MAST) ;
114
115         DISPLAY ( ' ' ) ;
116         DISPLAY ( 'ABBREVIATED COURSE DATABASE CIN/CDP DIRECTORY' ) ;
117         DISPLAY ( 'CONSTRUCT PROGRAM' ) ;
118         DISPLAY ( ' ' ) ;
119
120         CALL IHESRTD ( /* BY REC TYPE, BY CIN-CDP */
121                      ' SORT FIELDS=(1,1,CH,A,2,8,CH,A),SIZE=E2000 ',
122                      ' RECORD TYPE=F,LENGTH=(20)',
123                      50000, RCODE, E15A, E35A ) ;
124
125  /*****/
126
127  E15A:  /* SORT RECORD MAKEUP PROCEDURE */
128         PROC RETURNS ( CHAR (11) ) ;
129
130         N15 = N15 + 1 ;
131
132  /* THIS IS EOF ROUTINE FOR COURSE INPUT FILE */
133
134         ON ENDFILE (COURSE)
135         BEGIN ;
136
137         DISPLAY ( '*** EOF ON COURSE INPUT FILE ; '

```

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SOURCE CARD LISTING FOR
P7: /* ABBREVIATED COURSE FILE DIRECTORY CONSTRUCT - 12/14/76 */

```

138      || 'SORT PHASE START' ) ;
139      DISPLAY ( ' ' ) ;
140
141      REFS(3), REFS(1) = NC ;
142
143      CALL IHESARC (8) ; /* TELL SORT NOMORE RECORDS */
144      GO TO ENDE15A ;
145
146      END ;
147
148      /* E15A INITILIZATION DONE HERE ONLY ONE TIME */
149
150      IF ( N15 > 1 ) THEN GO TO STEP1 ;
151
152      STEP1: IF ( N15R > 0 ) THEN GO TO STEP3 ;
153
154      /* THIS IS E15A PROC MAINLINE, PROCESS A NEW RECORD */
155
156      STEP2: READ FILE (COURSE) INTO (ACRS) ;
157      NC = NC + 1 ;
158      RECPTR = NC ;
159      STYPE = '1' ;
160
161      OVERD.F1 = CIN ;
162      N15R = 1 ;
163      GO TO GIVE ;
164
165      /* HIRE, SECONDARY ENTRY; GIVE CDP RECORD OUT */
166
167      STEP3: N15R = 0 ;
168      STYPE = '2' ;
169
170      OVERD.F1 = ' ' ;
171      OVERC.F1 = CDP ;
172
173      /* HERE, ANOTHER RECORD GIVEN TO SORT */
174
175      GIVE: NS = NS + 1 ;
176      CALL IHESARC ( 12 ) ; /* GOT STILL ANOTHER RECORD */
177      RETURN ( RSORT ) ;
178
179      ENDE15A: END E15A ;
180
181      /*****
182
183      E35A: /* HERE IS THE SORT OUTPUT PROCEDURE */
184      PROC ( INREC ) ;
185
186      DECLARE INREC CHAR (20) ;
187
188      FM1: FORMAT ( SKIP(1), X(10), 2 ( X(2), F(4) ),
189                  X(2), A(8), 2 ( X(2), F(4) ) ) ;
190
191      N35 = N35 + 1 ;
192      RSORT = INREC ;
193
194      /* HERE, E35A INITILIZATION DONE ONE TIME */
195
196      IF ( N35 > 1 ) THEN GO TO ROUTER ;
197
198      DISPLAY ( '** SORT PHASE COMPLETE ; STARTING CIN '
199              || 'DIRECTORY MAKEUP' ) ;
200
201      DISPLAY ( ' ' ) ;
202      DISPLAY ( 'CIN NUM      CIN      TOTAL CDPs  REC PTR' ) ;
203      DISPLAY ( '-----' ) ;
204      DISPLAY ( ' ' ) ;
205
206      /* ENTRY ROUTING DONE HERE */

```


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SOURCE CARD LISTING FOR
P7: /* ABBREVIATED COURSE FILE DIRECTORY CONSTRUCT - 12/14/76 */

```

207 ROUTER: IF ( STYPE = '2' ) THEN GO TO TYPE2 ;
208
209 /* HERE, STILL PROCESSING CIN ENTRIES */
210
211 TYPE1: IF ( OVERD.F1 = YECIN ) THEN
212 DL1: DO ;
213 NT = NT + 1 ;
214 GO TO ANOTHER ;
215 END DL1 ;
216
217 IF ( N35 > 1 ) THEN /* HERE, CINS HAVE CHANGED */
218 DL2: DO ;
219 PUT STRING (DLINE) EDIT
220 ( TOTCIN, YECIN, NT, NFP )
221 ( X(1), F(4), X(4), A(8), X(6), F(3), X(7), F(3) ) ;
222 DISPLAY ( DLINE ) ;
223 END DL2 ;
224
225 NT = 1 ;
226 YECIN = OVERD.F1 ;
227 NFP = RECPTR ;
228 TOTCIN = TOTCIN + 1 ;
229 LOOP = LOOP + 1 ;
230
231 IF ( LOOP > 304 ) THEN GO TO BUMCIN ;
232
233 CINDER (LOOP) = OVERD ;
234
235 ANOTHER: CALL IHESARC ( 4 ) ; /* GIMMIE ANOTHER SORT RECORD */
236 RETURN ;
237
238 /* HERE, STARTING CDP ENTRIES */
239
240 TYPE2: IF ( T35 = 1 ) THEN /* MUST FINISH LAST CIN ENTRY */
241 LP3: DO ;
242
243 PUT STRING (DLINE) EDIT
244 ( TOTCIN, YECIN, NT, NFP )
245 ( X(1), F(4), X(4), A(8), X(6), F(3), X(7), F(3) ) ;
246 DISPLAY ( DLINE ) ;
247
248 DISPLAY ( ' ' ) ;
249 DISPLAY ( '** LAST OF CIN DIRECTORY ENTRIES ENCOUNTERED **' ) ;
250
251 DISPLAY ( ' ' ) ;
252 DISPLAY ( '** NOW STARTING CDP DIRECTORY **' ) ;
253
254 DISPLAY ( ' ' ) ;
255 DISPLAY ( 'CDP NUM CDP REC PTR' ) ;
256 DISPLAY ( '-----' ) ;
257 DISPLAY ( ' ' ) ;
258
259 CINPTR (1) = LOOP ;
260 REFS(2) = LOOP ;
261 T35 = 2 ;
262 LOOP = 1 ;
263 END LP3 ;
264
265 /* PROCESS NEXT CDP ENTRY HERE */
266
267 TOTCDP = TOTCDP + 1 ;
268 LOOP = LOOP + 1 ;
269
270 IF ( LOOP > 1200 ) THEN GO TO BUMCDP ;
271
272 CHCDP (LOOP) = OVERC.F1 ;
273 CDPTR (LOOP) = OVERC.F2 ;
274
275

```

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SOURCE CARD LISTING FOR
P7: /* ABBREVIATED COURSE FILE DIRECTORY CONSTRUCT - 12/14/76 */

```

276      PUT STRING (DLINE) EDIT
277      ( TOTCDP, OVERC.F1, OVERC.F2 )
278      ( X(1), F(4), X(4), A(4), X(4), F(4) ) ;
279      DISPLAY ( DLINE ) ;
280
281      GO TO ANOTHER ; /* ONTO NEXT SORT RECORD */
282
283      /* HERE, OVERFLOWS TO DIRECTORY MEMORY TABLES */
284
285      BUMCIN: DISPLAY ( ' ' ) ;
286      DISPLAY ( ' **** CIN TABLE OVERFLOW ****' ) ;
287      NER = 1 ;
288      GO TO BUM2 ;
289
290      BUMCDP: DISPLAY ( ' ' ) ;
291      DISPLAY ( ' **** CDP TABLE OVERFLOW ****' ) ;
292      NER = 2 ;
293
294      BUM2: DISPLAY ( ' ' ) ;
295      DISPLAY ( ' DIRECTORY CONSTRUCT PROGRAM IS TERMINATING'
296      || ' DUE TO ERROR' ) ;
297
298      CALL IHESARC ( 8 ) ; /* STOP SORT RECORDS, EVEN IF MORE */
299      GO TO ENDE35A ;
300
301      ENDE35A: END E35A ;
302
303      /*****
304
305      /* HERE, BACK (ONE WAY OR ANOTHER) FROM THE SORT;
306      EITHER THE SORT COMPLETED OK, OR ERROR FORCED
307      THE TERMINATION */
308
309      IF ( RCODE = 16 )
310      THEN DISPLAY ( ' *** SORT FAILED, CODE = 16 ***' ) ;
311
312      ELSE
313      IF ( RCODE = 0 )
314      THEN DISPLAY ( '** SORT COMPLETED OK, CODE = 0 **' ) ;
315
316      ELSE
317      DO ;
318      PUT STRING (DLINE) EDIT
319      ( '** SORT RETURN CODE INVALID, ',
320      'CODE WAS ', RCODE, ' ***' )
321      ( A, A, F(2), A ) ;
322      DISPLAY ( DLINE ) ;
323      END ;
324
325      /* NOW, FINISH UP BY WRITING DIRECTORIES OUT TO DISK */
326
327      IF ( RCODE /= 0 ) | ( NER > 0 ) THEN GO TO STEP99 ;
328
329      CDPPTR (1) = LOOP ;
330
331      LP4: DO J = 1 TO 4 ;
332      PLCIN = ADDR ( COVCIN (J) ) ;
333      WRITE FILE (DCIN) FROM (LOADCIN) ;
334      END LP4 ;
335
336      DISPLAY ( ' ' ) ;
337      DISPLAY ( '** CIN DIRECTORY HAS BEEN SUCCESSFULLY '
338      || ' REWRITTEN' ) ;
339
340      LP5: DO J = 1 TO 6 ;
341      PLCDP = ADDR ( COVCDP (J) ) ;
342      WRITE FILE (DCDP) FROM (LOADCDP) ;
343      END LP5 ;
344

```

PAGE NUMBER : 6

SOURCE CARD LISTING FOR
P7: /* ABBREVIATED COURSE FILE DIRECTORY CONSTRUCT - 12/14/76 */

```

345      DISPLAY ( ' ' ) ;
346      DISPLAY ( '** CDP DIRECTORY HAS BEEN SUCCESSFULLY '
347      || 'REWRITTEN' ) ;
348
349 STEP99: CLOSE FILE (DCIN), FILE (DCDP), FILE (COURSE) ;
350
351      REWRITE FILE (MREF) FROM (MAST) ;
352      CLOSE FILE (MREF) ;
353
354      DISPLAY ( ' ' ) ;
355      DISPLAY ( 'COURSE DIRECTORY CONSTRUCT PROGRAM '
356      || 'IS NOW TERMINATING' ) ;
357      DISPLAY ( ' ' ) ;
358
359      END P7 ;

```

PAGE NUMBER : 1

SOURCE CARD LISTING FOR
PTA: /* COURSE FILE DESCRIPTORS LOAD - WED/15/DEC/76 */PTA: /* COURSE FILE DESCRIPTORS LOAD - WED/15/DEC/76 */
PROC OPTIONS (MAIN) ;/* REVISIONS :
WED/15/DEC/76 - FIRST IMPLEMENTATION.
MON/14/MAR/77 - MOOS TO PREPARE FOR SHIP TO NCSS.
*/

```

10 DECLARE 1 CINDEX     STATIC,
11           2 CINDS     CHAR (8),
12           2 FILL      CHAR (5),
13           2 DTAB (100) FIXED BIN ;
14
15 DECLARE 1 CINCARD     STATIC,
16           2 CIND      CHAR (8),
17           2 FILL      CHAR (1),
18           2 CINNUMS    CHAR (71),
19
20           DLINE      CHAR (80) STATIC,
21           CARD       CHAR (80) BASED (PCARD) ;
22
23 DECLARE YECIN         CHAR (8)
24           STATIC INIT ( 'ABCDEFGH' ),
25           GNUMS (24)   FIXED BIN STATIC,
26           LCARD       CHAR (80) BASED (PLOAD),
27           ICOURSE (160) FIXED BIN STATIC,
28           ( N15, N35, NT, NC, TOTCIN, T15, NS, J, CINTOT,
29             NER )      FIXED BIN STATIC,
30           RSORT       CHAR (213) STATIC ;
31
32 DECLARE DCARD         FILE RECORD INPUT,
33           DESC        FILE RECORD OUTPUT,
34           DIND        FILE RECORD INPUT ;
35
36 DECLARE 1 CINDER (304) STATIC,
37           2 CHCIN     CHAR (8),
38           2 CINPTR    FIXED BIN,
39           LOADCIN     CHAR (760) BASED (PLCIN),
40           COVCIN (4)  CHAR (760) BASED (PTCIN) ;
41
42 DECLARE 1 DINDEX     BASED (PIN),
43           2 DSTART    FIXED BIN,
44           2 DEND      FIXED BIN,
45           2 NCAT      FIXED BIN,
46           2 NDESC     FIXED BIN,
47           2 CATEGORIES (15),
48           3 PCAT      FIXED BIN,
49           3 SCAT      FIXED BIN,
50           3 ECAT      FIXED BIN,
51           2 PDESC (111) FIXED BIN,
52           COVER (4)   CHAR (80) BASED (PCOV) ;
53
54 DECLARE 1 MAST        STATIC,
55           2 REFS (40)  FIXED BIN ;
56
57 /*****
58
59 START:  NC, NS, TOTCIN, NEOF, LOOP,
60         J, CINTOT, NT = 0 ;
61
62         PIN = ADDR (ICOURSE) ;
63         PCARD = ADDR (CINCARD) ;
64         PTCIN = ADDR (CINDER) ;
65         PCOV = ADDR (ICOURSE) ;
66         PLOAD = ADDR ( COVER(1) ) ;
67
68         OPEN FILE (DCARD) RECORD INPUT,

```


PAGE NUMBER : 2

SOURCE CARD LISTING FOR
P7A: /* COURSE FILE DESCRIPTORS LOAD - WED/15/DEC/76 */

```

69      FILE (DIND) RECJRD INPUT ;
70
71      READ FILE (DIND) IGNORE (1) ;
72
73 LP1:   DO J = 1 TO 4 ;
74         PLOAD = ADDR ( COVER (J) ) ;
75         READ FILE (DIND) INTO (LCARD) ;
76         END LP1 ;
77
78         DISPLAY ( ' ' ) ;
79         DISPLAY ( 'COURSE FILE DESCRIPTOR LOAD PROGRAM' ) ;
80
81         DISPLAY ( ' ' ) ;
82         DISPLAY ( 'CIN ASSIGNED DESCRIPTOR(S)' ) ;
83         DISPLAY ( '-----' ) ;
84         DISPLAY ( ' ' ) ;
85
86         CINDESC.FILL = ' ' ;
87
88         OPEN FILE (MREF) RECORD UPDATE ;
89         READ FILE (MREF) INTO (MAST) ;
90
91         ON ENDFILE (DCARD) GO TO EOJ ;
92
93         READ FILE (DCARD) INTO (CARD) ;
94         NC = 1 ;
95
96         DISPLAY ( CARD ) ;
97
98         GO TO STEP2 ;
99
100      /*****/
101
102      /* NEXT DESCRIPTOR CARD INPUT HERE */
103
104 STEP1:  READ FILE (DCARD) INTO (CARD) ;
105         NC = NC + 1 ;
106
107         DISPLAY ( CARD ) ;
108
109         IF ( CINID = YECIN ) THEN GO TO STEP3 ;
110
111      /* HERE, STARTING A BRAND-NEW CIN; FIRST WRITE OLD-CIN
112      RECORD OUT TO DESCRIPTOR FILE */
113
114         WRITE FILE (DESC) FROM (CINDESC) ;
115         NS = NS + 1 ;
116
117 STEP2:  YECIN = CINID ;          /* STARTING NEW CIN HERE */
118         TOTCIN = TOTCIN + 1 ;
119
120 STEP2B: CINDS = CINID ;          /* CINS HERE ARE (=), START */
121         DTAB = 0 ;              /* MAKEP OF NEW DESC RECORD */
122
123 STEP3:  GNUMS = 0 ;              /* EXTRACT SUBSCRIPTS */
124         GET STRING (CINNUMS) EDIT
125             (GNUMS) ( 24 ( F(2), X(1) ) ) ;
126
127         NT = 0 ;
128 LP3:   DO J = 1 TO 24 ;          /* SUBSCRIPTS VERIFIED HERE */
129         NTEST = GNUMS (J) ;
130         IF ( NTEST = 0 ) THEN GO TO ENDLP3 ;
131         NT = NT + 1 ;
132         IF ( PDESC ( NTEST ) = 0 ) THEN GO TO STEP4 ;
133
134         NER = NER + 1 ;
135
136         DISPLAY ( ' ' ) ;
137         PUT STRING (DLINE) EDIT

```

TAEG REPORT NO. 40

PAGE NUMBER : 3

SOURCE CARD LISTING FOR

P7A: /* COURSE FILE DESCRIPTORS LOAD - WED/15/DEC/76 */

```

138      ( '** ERROR IN CIN -', CINID,
139      '- DESCRIPTOR SUBSCRIPT ', NTEST,
140      ' DOES NOT EXIST **' ) ( A, A, A, F(4), A ) ;
141      DISPLAY ( DLINE ) ;
142      DISPLAY ( ' ' ) ;
143
144      GO TO ENDLP3 ;
145
146      STEP4:      DTAB (NTEST) = PDESC (NTEST) ;
147      ENDLP3:      END LP3 ;
148
149      GO TO STEP1 ;
150
151      /*****
152
153      /* HERE, EOF ON INPUT DESCRIPTOR DECK */
154
155      EOJ:      WRITE FILE (DESC) FROM (CINDESC) ;      /* LAST RECORD */
156      NS = NS + 1 ;
157
158      REFS (5) = NC ;
159      REFS (6) = NS ;
160      REWRITE FILE (MREF) FROM (MAST) ;
161
162      EOJ2:      CLOSE FILE (DESC), FILE (DIND),
163      FILE (MREF), FILE (DCARD) ;
164
165      DISPLAY ( ' ' ) ;
166      DISPLAY ( '** NOW AT EOF ON DESCRIPTOR CARD INPUT **' ) ;
167
168      DISPLAY ( ' ' ) ;
169      PUT STRING (DLINE) EDIT
170      ( ' TOTAL NUMBER DESCRIPTOR INPUT CARDS : ', NC )
171      ( A, P'Z,ZZ9' ) ;
172      DISPLAY ( DLINE ) ;
173
174      PUT STRING (DLINE) EDIT
175      ( ' TOTAL UNIQUE CIN NUMBERS IN INPUT : ', TOTCIN )
176      ( A, P'Z,ZZ9' ) ;
177      DISPLAY ( DLINE ) ;
178
179      PUT STRING (DLINE) EDIT
180      ( ' TOTAL NUMBER OUTPUT DESCRIPTOR RECORDS : ', NS )
181      ( A, P'Z,ZZ9' ) ;
182      DISPLAY ( DLINE ) ;
183
184      PUT STRING (DLINE) EDIT
185      ( ' TOTAL NUMBER CIN OR SUBSCRIPT ERRORS : ', NER )
186      ( A, P'Z,ZZ9' ) ;
187      DISPLAY ( DLINE ) ;
188
189      DISPLAY ( ' ' ) ;
190      DISPLAY ( 'COURSE DESCRIPTOR LOAD PROGRAM IS '
191      ' TERMINATING' ) ;
192      DISPLAY ( ' ' ) ;
193
194      END P7A ;

```

PAGE NUMBER : 1

SOURCE CARD LISTING FOR
P78: /* ABBREVIATED COURSE FILE LISTINGS - MON/17/JAN/77 */P78: /* ABBREVIATED COURSE FILE LISTINGS - MON/17/JAN/77 */
PROC (INPARM) OPTIONS (MAIN) ;/* REVISIONS :
MON/17/JAN/77 - FIRST IMPLEMENTATION.

SUN/20/MAR/77 - MODS PRIOR TO INSTALLATION AT NCSS.

*/

DECLARE INPARM CHAR (100) VARYING,
1 POVER BASED (PP),
2 PARM CHAR (1),
2 PARM2 CHAR (4) ;DECLARE INDESC FILE RECORD DIRECT
KEYED ENV (REGIONAL(1)),COURSE FILE RECORD DIRECT INPUT
KEYED ENV (REGIONAL(1)) ;DECLARE T1 CHAR (74) STATIC INIT (' CIN CDP COURSE TITLE
NOBC NEC RMS TPC LEN THRS LHRS ATTR STBX'),T2 CHAR (74) STATIC INIT ('-----
-----'),1 T3 STATIC,
2 F1 CHAR (15) INIT (' PRIORITY : '),
2 PC CHAR (2),
2 F2 CHAR (16) INIT (' TYPE CRS : '),
2 TYCRS CHAR (2),
2 F3 CHAR (19) INIT (' SERVICE CDE : '),
2 SVC CHAR (1),
2 F4 CHAR (16) INIT (' COST/AOB : '),
2 CAOB PICTURE '(4)Z9V.99',

T3OVER CHAR (79) BASED (PT3),

1 T4 STATIC,
2 F1 CHAR (15) INIT (' TRAPS : '),
2 TRAPS CHAR (1),
2 F2 CHAR (17) INIT (' STATUS : '),
2 STCD CHAR (1),
2 F3 CHAR (20) INIT (' STATUS DTE : '),
2 STDTE PICTURE '(5)9',
2 F4 CHAR (12) INIT (' METH-1 : '),
2 MI CHAR (1),

T4OVER CHAR (72) BASED (PT4),

D2 CHAR (2) DEF DLINE POS (1),
DLINE CHAR (80) STATIC ;DECLARE ELINE CHAR (38) STATIC INIT ('*** ERROR XX OCCURED; NREC WAS XXXXX ***'),
END CHAR (2) DEF ELINE POS (10),
ENREC PICTURE 'ZZZZ9' DEF ELINE POS (31),(DISP, PTR, TPAGE, J, JKEY, LL, LP, LT, MAX, MAXC,
MAXCDP, MAXCKEY, MAXLD, MAXLP, NREC, NSK,
PPAGE) FIXED BIN STATIC,(RTA(3), RTB(2),
RTC(2)) LABEL ;

/*****/

DECLARE 1 CDPDIR (1200) STATIC, /* CRS CDP DIRECTORY */

PAGE NUMBER : 2

SOURCE CARD LISTING FOR
P78: /* ABBREVIATED COURSE FILE LISTINGS - MON/17/JAN/77 */

```

69      2 CHCDP      CHAR (4),      /* CKF.CRS.DIRCDP */
70      2 CDPPTR     FIXED BIN,
71      LOADCDP      CHAR (1200) BASED (PLCDP),
72      COVCDP (6)    CHAR (1200) BASED (PTCDP);
73
74  DECLARE 1 DINDEX  STATIC,      /* OVERALL DESCRIPTOR INDEX */
75      2 DSTART     FIXED BIN,      /* CKF.DESC.INDEX */
76      2 DEND        FIXED BIN,
77      2 NCAT         FIXED BIN,
78      2 NDESC        FIXED BIN,
79      2 CATEGORIES   (15),
80      3 PCAT         FIXED BIN,
81      3 SCAT         FIXED BIN,
82      3 ECAT         FIXED BIN,
83      2 PDESC (111) FIXED BIN,
84
85      COVER (4)      CHAR (80) BASED (PCOV) ;
86
87  DECLARE 1 MAST     STATIC,
88      2 REFS (40)    FIXED BIN,
89      CARD           CHAR (80) STATIC ;
90
91  DECLARE 1 ACRS     STATIC,      /* ABBR. COURSE FILE */
92      2 SET1,        /* CKF.ACOURSES */
93      3 CDP           CHAR (4),
94      3 CIN           CHAR (8),
95      3 CST           CHAR (16),
96      3 VOBC          CHAR (4),
97      3 NEC           CHAR (4),
98      2 PC            CHAR (2),
99      2 SET2,
100     3 RMS           CHAR (3),
101     3 TYCRS          CHAR (2),
102     3 SVC            CHAR (1),
103     3 MI             CHAR (1),
104     2 STCD           CHAR (1),
105     2 STDTE          PICTURE '(5)9',
106     2 SET3,
107     3 TRAPS          CHAR (1),
108     3 TPC            CHAR (5),
109     2 ATTR           PICTURE '99V9',
110     2 STBK           PICTURE '99V9',
111     2 CLEN           PICTURE '999',
112     2 THRS           PICTURE '999',
113     2 LHR           PICTURE '999',
114     2 CAJB           PICTURE '(5)9V99',
115     2 CC80           CHAR (1) ;
116
117  /*****/

```

```

118
119  START:  PT3 = ADDR (T3) ;
120          PT4 = ADDR (T4) ;
121          PP = ADDR (INPARM) ;
122          PTCDP = ADDR (CDPDIR) ;
123          PCOV = ADDR (DINDEX) ;
124

```

```

125          TPAGE, PPAGE = 0 ;
126          MAXLP = 58 ;
127          MAXLD = 60 ;
128          NREC = -1 ;
129          JKEY = 1 ;
130          LL = 1 ;
131

```

```

132  COMMENCE:
133          OPEN FILE (MREF) RECORD INPUT ;
134          READ FILE (MREF) INTO (MAST) ;
135
136          MAXCDP = REFS(1) ;
137          MAXCKEY = REFS(1) + 2 ;

```


PAGE NUMBER : 3

SOURCE CARD LISTING FOR
P7B: /* ABBREVIATED COURSE FILE LISTINGS - MON/17/JAN/77 */

```

138         MAXC = REFS(4) ;
139
140         IF ( PARM = 'C' ) THEN GO TO CSETUP ;
141
142         OPEN FILE (COURSE) DIRECT INPUT ;
143
144         IF ( PARM = 'A' ) THEN GO TO FIRST ;
145
146 BSETUP: OPEN FILE (DCDP) RECORD INPUT ;
147 CDPLOAD: DO J = 1 TO 6 ;
148           PLCDP = ADDR ( CDVCDP(J) ) ;
149           READ FILE (DCDP) INTO (LOADCDP) ;
150           END CDPLOAD ;
151
152 CSETUP: OPEN FILE (INDESC) INPUT ;
153         DO J = 1 TO 4 ; /* NOTE, SKIPS RECORD 0 */
154           READ FILE (INDESC) INTO (CARD) KEY (J) ;
155           COVER (J) = CARD ;
156           END ;
157
158         NREC = DSTART - 1 ;
159
160 FIRST: DISP, PTR = 1 ;
161         IF ( PARM2 = 'BOTH' ) THEN GO TO STEP1 ;
162
163         IF ( PARM2 = 'TERM' )
164           THEN PTR = 2 ;
165           ELSE DISP = 2 ;
166
167 STEP1: LT, LP = 100 ;
168         IF ( PTR = 2 ) THEN GO TO STEP6 ;
169
170         /* HERE, PRINTER DATASET IS INITIALIZED */
171
172         OPEN FILE (MPTR) STREAM PRINT
173           PAGESIZE (58) LINESIZE (120) ;
174
175         ON ENDPAGE (MPTR)
176           BEGIN ;
177           PPAGE = PPAGE + 1 ;
178
179           IF ( PARM = 'C' ) THEN GO TO STEP2 ;
180
181           PUT FILE (MPTR) EDIT
182             ( 'PAGE NO : ', PPAGE, T1, T2, ' ' )
183             ( PAGE, LINE(2), X(10), A, F(4),
184               2 ( SKIP(1), X(10), A(74) ), SKIP(1), A ) ;
185           GO TO SKP ;
186
187 STEP2: PUT FILE (MPTR) EDIT ( 'PAGE NO : ', PPAGE,
188           '*** LISTING OF DESCRIPTOR CATEGORIES AS',
189           'APPLIED TO COURSE DATA ***',
190           ( PAGE, LINE(5), X(20), A, F(2),
191             SKIP(3), X(20), A, SKIP(1), X(20), A,
192             SKIP(3), A ) ;
193
194 SKP: PUT FILE (MPTR) SKIP (1) ;
195 STEP3: END ;
196
197         SIGNAL ENDPAGE (MPTR) ;
198
199 STEP6: IF ( PARM = 'C' ) THEN GO TO PLOOP ;
200
201         /* PRINTING LOOP FOR C-OPTION FOLLOWS */
202
203 CLOOP: NREC = NREC + 1 ;
204 ER2: IF ( NREC > MAXC ) THEN GO TO BUST2 ;
205       READ FILE (INDESC) INTO (DLINE) KEY (NREC) ;
206       GO TO ROUTEB ;

```

PAGE NUMBER : 4

SOURCE CARD LISTING FOR
P78: /* ABBREVIATED COURSE FILE LISTINGS - MON/17/JAN/77 */

/* PRINTING LOOP FOR A-B OPTIONS */

```

207
208
209
210 PLOOP: LL = 1 ;
211       IF ( PARM = 'B' ) THEN GO TO BREAD ;
212
213 AREAD: NREC = NREC + 1 ;
214       IF ( NREC > MAXCDP ) THEN GO TO EOFAB ;
215 GETCRS: READ FILE (COURSE) INTO (ACRS) KEY (NREC) ;
216         GO TO ROUTEA ;
217
218 BREAD: JKEY = JKEY + 1 ;
219       IF ( JKEY > MAXCKEY ) THEN GO TO EOFAB ;
220       NREC = CDPPTR (JKEY) ;
221 ER1:   IF ( NREC > MAXCDP ) THEN GO TO BUST1 ;
222         GO TO GETCRS ;
223

```

/* ROUTING DONE HERE BASED ON PRINT LINE NO 1,2, OR 3 */

```

224 ROUTEA: GO TO RTA (LL) ;
225
226 RTA(1): PUT STRING (DLINE) EDIT
227         ( CIN, CDP, CST, NOBC, NEC, RMS, TPC,
228           CLEN, THRS, LHRS, ATTR, STBK )
229         ( A(8), X(1), A(4), X(1), A(16), X(1), A(4), X(1),
230           A(4), X(1), A(3), X(1), A(5), X(1), P'ZZ9',
231           2 ( X(2), P'ZZ9' ), 2 ( X(1), P'Z9V.9' ) ) ;
232         GO TO ROUTEB ;
233
234
235 RTA(2): T3 = ACRS, BY NAME ;
236         T3.TYCRS = ACRS.SET2.TYCRS ;
237         T3.SVC = ACRS.SET2.SVC ;
238         DLINE = T3OVER ;
239         GO TO ROUTEB ;
240
241
242 RTA(3): T4 = ACRS, BY NAME ;
243         T4.TRAPS = ACRS.SET3.TRAPS ;
244         T4.MI = ACRS.SET2.MI ;
245         DLINE = T4OVER ;
246

```

/* NOW, SETUP FOR OUTPUT OF A NEW LINE */

```

247
248 ROUTEB: GO TO RTB (DISP) ;
249
250 RTB(1): /* HERE TERMINAL IS SERVICED */
251         LT = LT + 1 ;
252
253         IF ( PARM = 'C' ) THEN GO TO LP2A ;
254
255         IF ( LL = 1 ) THEN
256 LP1:     DO ;
257           LT = LT + 1 ;
258           DISPLAY ( ' ' ) ;
259         END LP1 ;
260
261 LP2A:   IF ( LT > MAXLD ) THEN
262 LP2:     DO ;
263           MAX = MAXLD + 4 ;
264
265 LP3:     DO J = LT TO MAX ;
266           DISPLAY ( ' ' ) ;
267         END LP3 ;
268
269         TPAGE = TPAGE + 1 ;
270         DISPLAY ( ' ' , PAGE : ' || TPAGE ) ;
271         DISPLAY ( ' ' ) ;
272         LT = 4 ;
273
274         IF ( PARM = 'C' ) THEN GO TO LP3A ;
275

```

PAGE NUMBER : 5

SOURCE CARD LISTING FOR
P78: /* ABBREVIATED COURSE FILE LISTINGS - MON/17/JAN/77 */

```

276
277         DISPLAY ( T1 ) ;
278         DISPLAY ( T2 ) ;
279         DISPLAY ( ' ' ) ;
280
281         LT = 7 ;
282 LP3A:     END LP2 ;
283
284         IF ( PARM = 'C' ) & ( (D2 = '**') | (D2 = '--') )
285             THEN DO ; DISPLAY ( ' ' ) ; LT = LT + 1 ; END ;
286
287         DISPLAY ( DLINE ) ;
288
289 RTB(2): /* IF REQUIRED, OFFLINE PTR SERVICED HERE */
290         GO TO RTC ( PTR ) ;
291
292 RTC(1): /* HERE, LINE PRINTER IS SERVICED */
293         NSK = 1 ;
294         IF ( PARM = 'C' ) THEN GO TO LINEOUT ;
295
296         IF ( LL = 1 ) & ( LINENO(MPTR) > 54 )
297             THEN SIGNAL ENDPAGE (MPTR) ;
298
299         IF ( LL = 1 ) THEN NSK = 2 ;
300
301 LINEOUT: IF ( PARM = 'C' ) & ( (D2 = '**') | (D2 = '--') )
302             THEN NSK = 2 ;
303
304         PUT FILE (MPTR) EDIT (DLINE)
305             ( SKIP(NSK), X(10), A(80) ) ;
306
307         /* NOW, REGROUP FOR NEXT LINE, IF ANY */
308
309 RTB(2):
310 TALLY:  IF ( PARM = 'C' ) THEN GO TO STEP5 ;
311
312         IF ( NREC >= DEND )
313             THEN GO TO EOFAB ;
314             ELSE GO TO CLOOP ;
315
316 STEP5:  LL = LL + 1 ;
317         IF ( LL < 4 ) THEN GO TO ROUTEA ;
318             ELSE GO TO PLOOP ;
319
320
321 /*****/
322
323         /* MAX KEY EXCEEDED ERRORS PROCESSED HERE */
324
325 BUST1:  END = '01' ;
326         GO TO STEP4 ;
327 BUST2:  END = '02' ;
328
329 STEP4:  ENREC = NREC ;
330
331 LP4:    IF ( DISP = 1 ) THEN
332         DO ;
333             DISPLAY ( ' ' ) ;
334             DISPLAY ( ELINE ) ;
335             DISPLAY ( ' ' ) ;
336             END LP4 ;
337
338         IF ( PTR = 1 ) THEN
339             PUT FILE (MPTR) EDIT (ELINE)
340                 ( SKIP(2), X(20), A(38) ) ;
341
342 /*****/
343
344         /* HERE, EOF OCCURED ON INPUT FILE */

```

PAGE NUMBER : 6

SOURCE CARD LISTING FOR
P7B: /* ABBREVIATED COURSE FILE LISTINGS - MON/17/JAN/77 */

345
346
347
348
349

EOFAB: IF (PTR = 1)
THEN CLOSE FILE (MPTR) ;
END P7B ;

PAGE NUMBER : 1

SOURCE CARD LISTING FOR
P8: /* VEHICLE DATA/DESCRIPTOR LOAD, DIRECTORY - MON/24/JAN/77 */P8: /* VEHICLE DATA/DESCRIPTOR LOAD, DIRECTORY - MON/24/JAN/77 */
PROC OPTIONS (MAIN) ;/* REVISIONS :
MON/24/JAN/77 - INITIAL IMPLEMENTATION.*/
TUE/15/MAR/77 - MODS PRIOR TO SHIPPING TO NCSS..

```

DECLARE CARD          CHAR (80) STATIC,
        DLINE         CHAR (80) STATIC,
        CC7079        CHAR (10) DEF CARD POS (70),
        FVEHS (200)   FIXED BIN STATIC,
        NODATA (200)   CHAR (13) STATIC,
        ( D1FLAG, D2FLAG, ND, NV, NT, K, NSK,
          NTEST, TER, NER, NDD, NFIND, NOD, TOTD, NS,
          NOIR, J ) FIXED BIN STATIC ;

```

```

DECLARE 1 DINDEX      STATIC,          /* OVERALL DESCRIPTOR INDEX */
        2 DSTART      FIXED BIN,      /* CKF.DESC.INDEX */
        2 DEVD        FIXED BIN,
        2 NCAT         FIXED BIN,
        2 NDESC        FIXED BIN,
        2 CATEGORIES (15),
        3 PCAT         FIXED BIN,
        3 SCAT         FIXED BIN,
        3 ECAT         FIXED BIN,
        2 PDESC (111) FIXED BIN,
        COVER (4)     CHAR (80) BASED (PCOV) ;

```

```

DECLARE 1 MAST        STATIC,
        2 REFS (40)   FIXED BIN,
        DIND          FILE RECORD DIRECT
        KEYED ENV ( REGIONAL(1) ) ;

```

/*****

```

DECLARE 1 VEHCARD     STATIC,          /* VEH DESCRIPTOR CARD */
        2 VSN         CHAR (13),      /* CKF.VDESC */
        2 FILL        CHAR (1),
        2 VEHNUMS     CHAR (66),
        VEH80         CHAR (80) BASED (PVV80),
        GVNS (22)     FIXED BIN STATIC,
        YEVEH         CHAR (13) STATIC INIT ( 'ABCDEFGH' ),
        1 VEHDESC     STATIC,          /* VEH DESCRIPTOR FILE */
        2 VEHDS       CHAR (13),      /* CKF.VEH.DESC */
        2 VTAB (100)  FIXED BIN ;

```

```

DECLARE 1 VEHDIR (200) STATIC,          /* VEHICLE DIRECTORY */
        2 CHVEH       CHAR (13),      /* CKF.VEH.DIR */
        2 VEMPTR      FIXED BIN,
        COVVEH (4)    CHAR (750) BASED (PTVEH),
        LOADVEH       CHAR (750) BASED (PLVEH) ;

```

```

DECLARE 1 AVEHICLES   STATIC,          /* ABBR. VEH FILE */
        2 STJCKN      CHAR (13),      /* CKF.AVEHS */
        2 DEVDESIG    CHAR (9),
        2 DEVNAME     CHAR (47),
        2 DEVCONST    PICTURE '(8)9V99',
        2 CC80        CHAR (1),
        VCONST        FIXED DEC (10,2) STATIC,
        VOVER         CHAR (80) BASED (PV80) ;

```

PAGE NUMBER : 2

SOURCE CARD LISTING FOR
P8: /* VEHICLE DATA/DESCRIPTOR LOAD, DIRECTORY - MON/24/JAN/77 */

69 /*****

70
71 START: ND, NV, TER, NER, NS,
72 TOTD, NFIND, NOD,
73 J = 0 ;

74
75 PCOV = ADDR (DINDEX) ;
76 PVV80 = ADDR (VEHCARD) ;
77 PV80 = ADDR (AVEHICLES) ;
78 PTVEH = ADDR (VEHDIR) ;

79
80 NDIR = -1 ; /* DIRECTORY RECORD POINTER */
81 NDD = 1 ; /* DIRECTORY LOAD SS, STARTS AT 2 */
82 FVEHS = 0 ; /* VEH NUMBER FLAG TABLE */
83 CHVEH = ' ' ; /* VEH DIRECTORY */
84 VEHPTR = 0 ;

85
86 OPEN FILE (MREF) RECORD UPDATE,
87 FILE (DIND) INPUT,
88 FILE (VDATA) RECORD INPUT,
89 FILE (VCDESC) RECORD INPUT,
90 FILE (DVEH) RECORD OUTPUT,
91 FILE (VDESC) RECORD OUTPUT,
92 FILE (VEHS) RECORD OUTPUT ;

93
94 ON ENDFILE (VCDESC) GO TO EOFDESC ;
95 ON ENDFILE (VDATA) GO TO EOFDATA ;

96
97 READ FILE (MREF) INTO (MAST) ;

98
99 LPI: DO J = 5 TO 8 ;
100 READ FILE (DIND) INTO (CARD) KEY (J) ;
101 COVER (J - 4) = CARD ;
102 END LPI ;

103 /*****

104 /* VEHICLE FILE DATA INPUT PROCESSED HERE */

105
106 DISPLAY (' ') ;
107 DISPLAY ('INITILIZE OF VEHICLE DATA AND DESCRIPTOR FILES') ;
108
109 DISPLAY (' ') ;
110 DISPLAY ('NUM STOCK NUMBER DESIGNATOR DEVICE ') ;
111 || 'NOMENCLATURE') ;
112 DISPLAY ('-----') ;
113 || '-----') ;
114 DISPLAY (' ') ;

115
116
117
118 STEP1: READ FILE (VDATA) INTO (CARD) ;
119 NV = NV + 1 ;

120
121 GET STRING (CC7079) EDIT (VCOST) (F(10,2)) ;
122 PUT STRING (CC7079) EDIT (VCOST) (P(8)9V99') ;

123
124 VJVER = CARD ;

125
126 PUT STRING (DLINE) EDIT
127 (NV, STOCKN, DEVDESIG, DEVNAME)
128 (F(3), X(2), A, X(2), A, X(2), A) ;
129 DISPLAY (DLINE) ;

130
131 IF (STOCKN = YEVEH) THEN
132 DO ;
133 NV = NV - 1 ;

134 DUPS:

135
136 DISPLAY (' ') ;
137 DISPLAY (' ** DUPLICATE STOCK NUMBER ON PRECEEDING CARD') ;
DISPLAY (' RECORD WILL BE IGNORED **') ;

PAGE NUMBER : 3

SOURCE CARD LISTING FOR
P8: /* VEHICLE DATA/DESCRIPTOR LOAD, DIRECTORY - MON/24/JAN/77 */

```

138      DISPLAY ( ' ' ) ;
139
140      GO TO STEP1 ;
141      END DUPS ;
142
143      WRITE FILE (VEHS) FROM (CARD) ;
144
145      YEVEH = STOCKN ;
146      NDD = VDD + 1 ;
147      NDIR = NDIR + 1 ;
148      VEHPTN (NDD) = NDIR ;
149      CHVEH (NDD) = STOCKN ;
150
151      GO TO STEP1 ;
152
153      /* HERE, EOF ON CARD DATA INPUT DATASET */
154
155      EOFDATA: VEHPTN (1) = NDD ; /* LAST SS USED (1-ORGIN) IN DIR */
156
157      DISPLAY ( ' ' ) ;
158      DISPLAY ( '** NOW AT EOF ON DATA CARD INPUT **' ) ;
159
160      PUT STRING (DLINE) EDIT
161      ( ' A TOTAL OF ' , NV, ' INPUT CARDS WERE READ' )
162      ( ' A, P'Z,ZZ9', A ) ;
163      DISPLAY ( DLINE ) ;
164
165      LP2:      DO J = 1 TO 4 ; /* WRITE OUT DIRECTORY */
166      PLVEH = ADDR ( COVVEH(J) ) ;
167      WRITE FILE (DVEH) FROM (LOADVEH) ;
168      END LP2 ;
169
170      DISPLAY ( ' ' ) ;
171      DISPLAY ( '** VEHICLE DIRECTORY HAS BEEN SUCCESSFULLY '
172      || 'REWRITTEN' ) ;
173
174      REFS (7) = NV - 1 ;
175      REFS (8) = NDD ;
176
177      /*****/
178
179      /* INITILIZE START OF DESCRIPTOR LOAD HERE */
180
181      DISPLAY ( ' ' ) ;
182      DISPLAY ( '** LOAD OF VEHICLE DESCRIPTOR FILE FOLLOWS **' ) ;
183
184      DISPLAY ( ' ' ) ;
185      DISPLAY ( 'STOCK NUMBER   DEVICE DESCRIPTORS' ) ;
186      DISPLAY ( '-----' ) ;
187      DISPLAY ( ' ' ) ;
188
189      READ FILE (VCDESC) INTO (VEHCARD) ;
190      ND = 1 ;
191      GO TO STEP3 ;
192
193      /* HERE IS THE DESCRIPTOR LOAD LOOP */
194
195      STEP2:  READ FILE (VCDESC) INTO (VEHCARD) ;
196      ND = ND + 1 ;
197
198      LP3:  IF ( VSN = YEVEH ) THEN
199      DO ;
200      NSK = 1 ;
201      GO TO STEP4 ;
202      END LP3 ;
203
204      WRITE FILE (VDESC) FROM (VEHDESC) ;
205      NS = NS + 1 ;
206

```

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PAGE NUMBER : 4

SOURCE CARD LISTING FOR
P8: /* VEHICLE DATA/DESCRIPTOR LOAD, DIRECTORY - MON/24/JAN/77 */

```

207 STEP3: YEVEH = VSN ;
208         TODD = TODD + 1 ;
209         VTAB = 0 ;
210         VEHDS = VSN ;
211         NSK = 2 ;
212
213 LP5:      DO J = 1 TO NOD ; /* SEE IF MATCHING DATA AVAILABLE */
214           IF ( VSN = CHVEH(J) ) THEN GO TO LP5END ;
215             NFIND = NFIND + 1 ;
216             FVEHS (J) = 1 ;
217             GO TO STEP4 ;
218 LP5END:   END LP5 ;
219
220         NOD = NOD + 1 ;
221         NODATA (NOD) = VSN ;
222
223 STEP4:   DLINE = VSN || ' ' || VEHNAMS ;
224          DISPLAY ( DLINE ) ;
225
226          GVNS = 0 ;
227          GET STRING (VEHNAMS) EDIT (GVNS) ( 22 ( F(2), X(1) ) ) ;
228
229          NT = 0 ;
230          DO J = 1 TO 22 ;
231            NTEST = GVNS (J) ;
232            IF ( NTEST = 0 ) THEN GO TO ENDLP4 ;
233              NT = NT + 1 ;
234              IF ( PDESC(NTEST) = 0 ) THEN GO TO STEP5 ;
235
236          NER = NER + 1 ;
237          DISPLAY ( ' ' ) ;
238          PUT STRING (DLINE) EDIT
239            ( '** ERROR IN VEH -', VSN, '- DESCRIPTOR SUBSCRIPT ',
240              NTEST, ' DOES NOT EXIST **' )
241            ( A, A, A, F(4), A ) ;
242          DISPLAY ( DLINE ) ;
243
244          IF ( NER > 100 ) THEN GO TO EOJ ;
245          GO TO ENDLP4 ;
246
247 STEP5:   VTAB (NTEST) = PDESC (NTEST) ;
248 ENDLP4:  END LP4 ;
249
250          GO TO STEP2 ;
251
252          /* HERE IS EOF ON DESCRIPTOR CARD INPUT */
253
254 EOFDESC: WRITE FILE (VDESC) FROM (VEHDESC) ;
255          NS = NS + 1 ;
256
257          REFS (9) = NS ;
258          REFS (10) = ND ;
259
260          DISPLAY ( ' ' ) ;
261          DISPLAY ( '** EOF REACHED ON DESCRIPTOR CARD INPUT FILE **' ) ;
262
263          DISPLAY ( ' ' ) ;
264          PUT STRING (DLINE) EDIT
265            ( ' TOTAL NUMBER DESCRIPTOR CARDS INPUT : ',
266              ND ) ( A, P'Z,ZZ9' ) ;
267          DISPLAY ( DLINE ) ;
268
269          PUT STRING (DLINE) EDIT
270            ( ' TOTAL NUMBER UNIQUE VEHICLE STOCK NUMBERS : ',
271              TODD ) ( A, P'Z,ZZ9' ) ;
272          DISPLAY ( DLINE ) ;
273
274          PUT STRING (DLINE) EDIT
275            ( ' TOTAL MATCHES FOUND IN VEHICLE DATA DIRECTORY : ',

```


PAGE NUMBER : 5

SOURCE CARD LISTING FOR
P8: /* VEHICLE DATA/DESCRIPTOR LOAD, DIRECTORY - MON/24/JAN/77 */

```

276         NFIND ) ( A, P'Z,ZZ9' ) ;
277         DISPLAY ( DLINE ) ;
278
279 /******
280
281 /* ANY REQUIRED DIAGNOSTICS OUTPUT IN THIS SECTION */
282
283         IF ( NFIND = NV ) THEN GO TO STEP6 ;
284
285 /* HERE DESCRIPTOR / DATA MISMATCHES PRINTED */
286
287         DISPLAY ( ' ' ) ; DISPLAY ( ' ' ) ;
288         DISPLAY ( '** THE FOLLOWING DATA FILE VEH NUMBERS' ) ;
289         DISPLAY ( ' HAVE NO MATCH IN THE VEH DESCRIPTOR INPUT **' ) ;
290         DISPLAY ( ' ' ) ;
291
292         K = 0 ;
293 LP6:      DO J = 1 TO NOD ;
294           IF ( FVEHS(J) = 1 ) THEN GO TO LP6END ;
295           K = K + 1 ;
296
297           DISPLAY ( (5)' ' || CHVEH(J) ) ;
298
299 LP6END:   END LP6 ;
300
301 /* HERE, DESCRIPTOR VEH NUMS W/O MATCHING DATA FILE ENTRIES
302 ARE PRINTED - IF ANY */
303
304 STEP6:   IF ( NOD = 0 ) THEN GO TO BITTEREND ;
305
306         DISPLAY ( ' ' ) ; DISPLAY ( ' ' ) ;
307         DISPLAY ( '** THE FOLLOWING DESCRIPTOR CARD VEH NUMBERS' ) ;
308         DISPLAY ( ' HAVE NO MATCH IN THE VEH DATA FILE **' ) ;
309         DISPLAY ( ' ' ) ;
310
311 LP7:      DO J = 1 TO NOD ;
312         DISPLAY ( (5)' ' || NODATA(J) ) ;
313         END LP7 ;
314
315 /******
316
317 /* HERE AM THE WINDUP */
318
319 BITTEREND:
320         REWRITE FILE (MREF) FROM (MAST) ;
321
322 EOJ:      CLOSE FILE (MREF), FILE (VDATA), FILE (VCDESC),
323           FILE (DIND), FILE (VDESC),
324           FILE (DVEH), FILE (VEHS) ;
325
326         DISPLAY ( ' ' ) ;
327         DISPLAY ( 'VEHICLE DATA/DIRECTORY/DESCRIPTOR LOAD PROGRAM' ) ;
328         DISPLAY ( ' IS NOW TERMINATING' ) ;
329         DISPLAY ( ' ' ) ;
330
331         END P8 ;

```

PAGE NUMBER : 1

SOURCE CARD LISTING FOR
P8A: /* ABBREVIATED VEHICLE FILE LISTINGS - WED/2/FEB/77 */P8A: /* ABBREVIATED VEHICLE FILE LISTINGS - WED/2/FEB/77 */
PROC (INPARM) OPTIONS (MAIN) ;/* REVISIONS :
WED/02/FEB/77 - FIRST IMPLEMENTATION.*/
SUN/20/MAR/77 - MODS PRIOR TO INSTALLATION AT NCSS.DECLARE (DIND, VEHS) FILE RECORD DIRECT
KEYED ENV (REGIONAL(1)),INPARM CHAR (100) VARYING,
1 POVER BASED (PP),
2 PARM CHAR (1),
2 PARM2 CHAR (4),VCOST FIXED DEC (10,2) STATIC,
DLINE CHAR (80) STATIC,
D2 CHAR (2) DEF DLINE POS (1),
CARD CHAR (80) STATIC,T1 CHAR (46) STATIC INIT (
'ITEM STOCK-NUMBER DESIGNATOR VEHICLE COST'),T2 CHAR (46) STATIC INIT (
'-----'),T3 CHAR (11) STATIC INIT (
'PAGE : XXXX'),
T3P PICTURE 'ZZZ9' DEF T3 POS (8),ELINE CHAR (39) STATIC INIT (
'** ERROR XX OCCURED ; NREC WAS XXXXX **'),
ENO PICTURE '99' DEF ELINE POS (10),
ENREC PICTURE 'Z,ZZ9' DEF ELINE POS (32),(DISP, PTR, NPAGE, DPAGE, LT, JKEY, L, LP, NC, NREC,
MAXC, MAXIND, MAXLT, MAXLTA, MAXLTB, MAXSS, MAXVEH,
J, K) FIXED BIN STATIC ;

/*****/

DECLARE 1 DINDEX STATIC, /* OVERALL DESCRIPTOR INDEX */
2 DSTART FIXED BIN, /* CKF.DESC.INDEX */
2 DEND FIXED BIN,
2 NCAT FIXED BIN,
2 NDESC FIXED BIN,
2 CATEGORIES (15),
3 PCAT FIXED BIN,
3 SCAT FIXED BIN,
3 ECAT FIXED BIN,
2 PDESC (111) FIXED BIN,
COVER (4) CHAR (80) BASED (PCOV) ;DECLARE 1 MAST STATIC,
2 REFS (40) FIXED BIN,
MREF FILE RECORD ;DECLARE 1 VEHDIR (200) STATIC, /* VEHICLE DIRECTORY */
2 CHVEH CHAR (13), /* CKF.VEH.DIR */
2 VEHPTD FIXED BIN,
COVVEH (4) CHAR (750) BASED (PTVEH),
LOADVEH CHAR (750) BASED (PLVEH) ;DECLARE 1 AVEHICLES STATIC, /* ABBR. VEH FILE */
2 STOCKN CHAR (13), /* CKF.AVEHS */
2 DEVDESIG CHAR (9),

PAGE NUMBER : 2

SOURCE CARD LISTING FOR
PBA: /* ABBREVIATED VEHICLE FILE LISTINGS - WED/2/FEB/77 */

```

2 DEVNAME CHAR (47),
2 DEVCOST PICTURE '(8)9V99',
2 CC80 CHAR (1),
VOVER CHAR (80) BASED (PV80) ;

```

/*****/

```

START: NPAGE, DPAGE, NC,
      J, K = 0 ;

```

```

LT = 100 ; /* DISPLAY PAGE LINE COUNT */
MAXLT = 60 ; /* MAX # LINES ON DISPLAY */
JKEY = 1 ; /* SS IN DIRECTORY FOR EXTRACT -
            NOTE - SKIPS FIRST LOC VEHPT(1) */

```

PP = ADDR (INPARM) ;

PV80 = ADDR (AVEHICLES) ;

PTVEH = ADDR (VEHDIR) ;

PCOV = ADDR (DINDEX) ;

COMMENCE:

```

OPEN FILE (MREF) RECORD INPUT,
      FILE (DIND) INPUT,
      FILE (VEHS) INPUT,
      FILE (DVEH) RECORD INPUT ;

```

READ FILE (MREF) INTO (MAST) ;

MAXVEH = REFS (7) ;

MAXC = REFS (4) ;

IF (PARM = 'B') THEN GO TO BSETUP ;

ASETUP: MAXSS = REFS (8) ; /* HERE, PLAN FOR ABBREVIATED DATA FILE */

DIRLOAD:

```

DO J = 1 TO 4 ;
PLVEH = ADDR ( COVVEH(J) ) ;
READ FILE (DVEH) INTO (LOADVEH) ;
END DIRLOAD ;

```

MAXLTA = MAXLT - 3 ;

GO TO FIRST ;

BSETUP:

```

DO J = 5 TO 8 ; /* SETUP FOR DESCRIPTOR LIST */
READ FILE (DIND) INTO (CARD) KEY (J) ;
COVER ( J - 4 ) = CARD ;
END BSETUP ;

```

MAXIND = REFS (4) ;

NREC = DSTART - 1 ;

MAXLTB = MAXLT - 2 ;

/*****/

FIRST: DISP, PTR = 1 ; /* DEVICE ASSIGNMENTS CHECKED HERE */

IF (PARM2 = 'BOTH') THEN GO TO STEP1 ;

```

IF ( PARM2 = 'TERM' )
THEN PTR = 2 ;
ELSE DISP = 2 ;

```

STEP1: LT, LP = 100 ;

/* HERE, PRINTER DATASET IS INITIALIZED */

IF (PTR = 2) THEN GO TO STEP4 ;

OPEN FILE (SYSPRINT)

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SOURCE CARD LISTING FOR
P8A: /* ABBREVIATED VEHICLE FILE LISTINGS - WED/2/FEB/77 */

```

138          PAGESIZE (58) LINESIZE (120) ;
139
140      ON ENDPAGE (SYSPRINT)
141      BEGIN ;
142          NPAGE = NPAGE + 1 ;
143
144          IF ( PARM = 'B' ) THEN GO TO STEP2 ;
145
146          PJT EDIT ( 'PAGE NO : ', NPAGE, T1, T2, ' ' )
147              ( PAGE, LINE(2), X(10), A, F(4),
148                2 ( SKIP(1), X(10), A(46) ), SKIP(1), A ) ;
149              GO TO STEP3 ;
150
151      STEP2:      PUT EDIT ( 'PAGE NO : ', NPAGE,
152                          '*** LISTING OF DESCRIPTOR CATEGORIES AS',
153                          'APPLIED TO VEHICLE DATA ***',
154                          ( PAGE, LINE(5), X(20), A, F(2),
155                            SKIP(3), X(20), A, SKIP(1), X(20), A,
156                            SKIP(3), A ) ;
157
158      STEP3:      PUT SKIP (1) ;
159                  END ;
160
161                  SIGNAL ENDPAGE (SYSPRINT) ;
162
163                  /* HERE, DISPLAY DATASET SETUP, IF REQUIRED */
164
165      STEP4:      IF ( DISP = 2 ) THEN GO TO LOOP ;
166
167                  ON CONDITION (NEWDP)
168                  BEGIN ;
169                      IF ( LT < 61 ) THEN LT = 61 ;
170
171                      IF ( LT < 66 ) THEN
172      LP1:          DO L = LT TO 66 ;
173                      DISPLAY ( ' ', ) ;
174                      END LP1 ;
175
176                      DISPLAY ( ' ', ) ;
177                      DPAGE = DPAGE + 1 ;
178                      T3P = DPAGE ;
179                      DISPLAY ( T3 ) ;
180                      DISPLAY ( ' ', ) ;
181                      LT = 4 ;
182
183                      IF ( PARM = 'A' ) THEN
184      TTLA:        DO ;
185                      DISPLAY ( 'ITEM      STOCK NUM      DESIGNATOR      DEVICE COST' ) ;
186                      DISPLAY ( '-----' ) ;
187                      DISPLAY ( ' ', ) ;
188                      LT = LT + 3 ;
189                      END TTLA ;
190
191                      END ;
192
193                  SIGNAL CONDITION (NEWDP) ;
194
195      /******
196
197      /* HERE IS MAIN PROGRAM LOOP */
198
199      LOOP:      IF ( PARM = 'B' ) THEN GO TO STEP5 ;
200
201                  /* HERE, PRINT SETUP FOR B-OPTION - VEHICLE DESIGNATORS */
202
203      BLOOP:      NREC = NREC + 1 ;
204      ER1:        IF ( NREC > MAXC ) THEN GO TO BUST1 ;
205                  READ FILE (DIND) INTO (DLINE) KEY (NREC) ;
206                  GO TO STEP6 ;

```


PAGE NUMBER : 4

SOURCE CARD LISTING FOR
P8A: /* ABBREVIATED VEHICLE FILE LISTINGS - WED/2/FEB/77 */

/* HERE, SETUP FOR A-OPTION, VEHICLE DATA PRINT */

```

207
208
209
210 STEP5: JKEY = JKEY + 1 ;
211         IF ( JKEY > MAXSS ) THEN GO TO EOFAB ;
212         NREC = VEHPTR (JKEY) ;
213 ER2:    IF ( NREC > MAXVEH ) THEN GO TO BUST2 ;
214         READ FILE (VEHS) INTO (AVEHICLES) KEY (NREC) ;
215         NC = NC + 1 ;
216

```

/*****/

/* NOW, OUTPUT THE NEW LINE(S); FIRST TRY DISPLAY */

```

217
218
219
220
221 STEP6: IF ( DISP = 2 ) THEN GO TO STEP7 ;
222
223         IF ( PARM = 'A' ) THEN
224 LP2:    DO ;
225         IF ( LT > MAXLTA ) THEN SIGNAL CONDITION (NEWDP) ;
226         DISPLAY ( ' ' ) ;
227
228         PUT STRING (DLINE) EDIT
229             ( NC, STOCKN, DEVDESIG, DEVCOST )
230             ( F(4), X(2), A(13), X(2), A(9),
231             X(2), P'$$$,$$$,$$9.V99' ) ;
232         DISPLAY (DLINE) ;
233
234         DISPLAY ( (10)' ' || DEVNAME ) ;
235
236         LT = LT + 3 ;
237         GO TO STEP7 ;
238         END LP2 ;
239
240         IF ( LT > MAXLTB ) THEN SIGNAL CONDITION (NEWDP) ;
241
242         IF ( PARM = 'B' ) & ( (D2 = '**') | (D2 = '--') )
243         THEN DO ; DISPLAY ( ' ' ) ; LT = LT + 1 ; END ;
244         DISPLAY ( DLINE ) ;
245
246         LT = LT + 1 ;
247

```

/* HERE, TRY FOR PRINTER OUTPUT */

```

248
249
250 STEP7: IF ( PTR = 2 ) THEN GO TO TALLY ;
251
252         IF ( PARM = 'B' ) THEN
253 LP3:    DO ;
254
255         IF ( (D2 = '**') | (D2 = '--') )
256         THEN PUT SKIP (2) ;
257
258         PUT EDIT ( DLINE ) ( SKIP(1), X(10), A(80) ) ;
259         GO TO TALLY ;
260         END LP3 ;
261
262         PUT EDIT ( NC, STOCKN, DEVDESIG, DEVCOST, DEVNAME )
263             ( SKIP(2), X(10), F(4), X(2), A(13), X(2), A(9),
264             X(2), P'$$$,$$$,$$9.V99', X(3), A(47) ) ;
265

```

/* HERE, RECYCLE FOR NEXT, IF REQUIRED */

```

266
267
268 TALLY: IF ( PARM = 'A' ) THEN GO TO STEP5 ;
269
270 TALLYB: IF ( NREC >= DEND )
271         THEN GO TO EOFAB ;
272         ELSE GO TO LOOP ;
273

```

/*****/

PAGE NUMBER : 5

SOURCE CARD LISTING FOR

P8A: /* ABBREVIATED VEHICLE FILE LISTINGS - WED/2/FEB/77 */

/* MAX KEYS EXCEEDED ERRORS PROCESSED HERE */

BUST1: ENO = 1 ;
GO TO ERCOM ;

BUST2: ENO = 2 ;

ERCOM: ENREC = NREC ;

LP4: IF (DISP = 2) THEN
DO ;
DISPLAY (: :) ;
DISPLAY (: :) ;
DISPLAY (ELINE) ;
DISPLAY (: :) ;
END LP4 ;IF (PTR = 1) THEN
PUT LIST (ELINE) SKIP (3) ;

/*****/

/* YE OLDE WINDUP HERE */

EOFAB: CLOSE FILE (MREF), FILE (DIND), FILE (VEHS),
FILE (DVEH) ;

END P8A ;

PAGE NUMBER : 1

SOURCE CARD LISTING FOR
P9: /* TASK DATA/DESCR/DIRECTORY LOAD - FRI/28/JAN/77 */P9: /* TASK DATA/DESCR/DIRECTORY LOAD - FRI/28/JAN/77 */
PROC OPTIONS (MAIN) ;/* REVISIONS :
FRI/28/JAN/77 - INITIAL INSTALLATION.
WED/02/FEB/77 - CORRECTIONS TO FIX DATA LOAD.
FRI/18/MAR/77 - MODS PRIOR TO INSTALLATION AT NCSS.
*/DECLARE CARD CHAR (80) STATIC,
CC7079 CHAR (10) DEF CARD POS (70),
DLIN CHAR (80) STATIC,
DL4 CHAR (4) DEF DLIN POS (1),
(DISP, PRTR, NPAGE) FIXED BIN STATIC,
FTASKS (1200) FIXED BIN STATIC,
NODATA (1200) CHAR (13) STATIC,
(ND, NV, NT, K, NSK, TOTD, NS,
NTEST, TER, NER, NOD, NFIND, NOD, NLIST,
NDIR, J) FIXED BIN STATIC ;DECLARE 1 DINDEX STATIC, /* OVERALL DESCRIPTOR INDEX */
2 DSTART FIXED BIN, /* CKF.DESC.INDEX */
2 DEND FIXED BIN,
2 NCAT FIXED BIN,
2 NDESC FIXED BIN,
2 CATEGORIES (15),
3 PCAT FIXED BIN,
3 SCAT FIXED BIN,
3 ECAT FIXED BIN,
2 PDESC (111) FIXED BIN,
COVER (4) CHAR (80) BASED (PCOV) ;DECLARE 1 MAST STATIC,
2 REFS (40) FIXED BIN,
DIND FILE RECORD DIRECT
KEYED ENV (REGIONAL(1)) ;

/*****/

DECLARE 1 TDATA CARD STATIC,
2 F13 CHAR (13),
2 JTTL CHAR (50),
2 FILL CHAR (6),
2 BCOST CHAR (10),
2 FILL2 CHAR (1),
TOVER CHAR (80) BASED (PTO80),
TCOST FIXED DEC (10,2) ;DECLARE 1 TASKCARD STATIC, /* TASK DESCRIPTOR CARDS */
2 TASKN CHAR (13), /* CKF.TDESC */
2 TASKNUMS CHAR (67),
1 TASKOVER BASED (PTO),
2 RATING CHAR (5),
2 RANK CHAR (2),
2 JOBTASK CHAR (6),TASK80 CHAR (80) BASED (PTT80),
TVNS (22) FIXED BIN STATIC,
YETASK CHAR (13) STATIC INIT ('ABCDEF') ;

DECLARE 1 TASKDESC STATIC, /* TASK DESCRIPTOR FILE */

PAGE NUMBER : 2

SOURCE CARD LISTING FOR

P9: /* TASK DATA/DESCR/DIRECTORY LOAD - FRI/28/JAN/77 */

```

69      2 TASKDS      CHAR (13),      /* CKF.TASK.DESC */
70      2 TTAB (100)  FIXED BIN;
71
72  DECLARE 1 TASKDIR (1200) STATIC,      /* JOBTASK FILE DIRECTORY */
73          2 CHTASK   CHAR (13),      /* CKF.TASKS.DIR */
74          2 TASKPTR   FIXED BIN;
75
76          COVTASK (12)  CHAR (1500) BASED (PTTASK),
77          LOADTASK     CHAR (1500) BASED (PLTASK);
78
79  DECLARE 1 ATASKS     STATIC,      /* ABBR. TASK FILE */
80          2 RATING     CHAR (7),      /* CKF.ATASKS */
81          2 JOBTASK     CHAR (6),
82          2 TASKTTL     CHAR (50),
83          2 FILL        CHAR (6),
84          2 BILCOST     PICTURE '(8)9V99',
85          2 CC80        CHAR (1);
86
87  /*****
88
89  START:  ND, NV, TER, NER, NS,
90          TOTO, NFIND, NOD,
91          J = 0;
92
93          PCOV = ADDR (DINDEX);
94          PTT80 = ADDR (TASKCARD);
95          PTTASK = ADDR (TASKDIR);
96          PTO80 = ADDR (ATASKS);
97          PTO = ADDR (TDATACARD);
98
99          NDIR = -1;      /* DIRECTORY RECORD POINTER */
100         NDD = 1;      /* DIRECTORY LOAD SS, STARTS AT 2 */
101         FTASKS = 0;    /* TASK FLAG TABLE */
102         CHTASK = ' ';  /* TASK DIRECTORY PRELIMINARY FILL */
103         TASKPTR = 0;
104         NLIST = 1;     /* PRINTER TITLE CONTROL */
105
106         OPEN FILE (MREF) RECORD UPDATE,
107                 FILE (DIND) INPUT,
108                 FILE (TDATA) RECORD INPUT,
109                 FILE (TCDESC) RECORD INPUT,
110                 FILE (DTASK) RECORD OUTPUT,
111                 FILE (TDESC) RECORD OUTPUT,
112                 FILE (TASKS) RECORD OUTPUT;
113
114         ON ENDFILE (TCDESC) GO TO EOFDESC;
115         ON ENDFILE (TDATA) GO TO EOFDATA;
116
117         READ FILE (MREF) INTO (MAST);
118
119  LP1:      DO J = 9 TO 12;
120             READ FILE (DIND) INTO (CARD) KEY (J);
121             COVER ( J - 8 ) = CARD;
122             END LP1;
123
124             DISPLAY ( ' ' );
125             DISPLAY ( 'TASK DATA/DIRECTORY/DESCRIPTOR LOAD'
126                     '|| ' PROGRAM IS NOW STARTING' );
127
128  *****/
129
130  /* PRINTER/TERMINAL REQUIREMENTS SETUP IN THIS SECTION */
131
132         NPAGE = 0;
133         DISP, PRTR = 1;
134
135         DISPLAY ( ' ' );
136  TP1:      DISPLAY ( 'OUTPUT TO GO TO TERMINAL, OFFLINE PRINTER,'
137                     '|| ' OR BOTH?' );

```


PAGE NUMBER : 3

SOURCE CARD LISTING FOR
P9: /* TASK DATA/DESCR/DIRECTORY LOAD - FRI/28/JAN/77 */

```

138 TP2:  DISPLAY ( 'ENTER TERM, PRTR, BOTH, OR QUIT' ) REPLY (DLINE) ;
139
140      IF ( DL4 = 'TERM' ) THEN GO TO STERM ;
141      IF ( DL4 = 'PRTR' ) THEN GO TO OPRTR ;
142      IF ( DL4 = 'BOTH' ) THEN GO TO SPRTR ;
143      IF ( DL4 = 'QUIT' ) THEN GO TO FEND ;
144
145      DISPLAY ( ' ' ) ;
146      DISPLAY ( 'UNABLE TO DETERMINE ENTRY TYPE - TRY AGAIN' ) ;
147      DISPLAY ( ' ' ) ;
148      GO TO TP2 ;
149
150 OPRTR: DISP = 2 ;
151
152 SPRTR: OPEN FILE (SYSPRINT) LINESIZE (120) PAGESIZE (60) ;
153
154      ON ENDPAGE (SYSPRINT)
155      BEGIN ;
156      NPAGE = NPAGE + 1 ;
157      IF ( NLIST = 2 ) THEN GO TO TTLL2 ;
158
159      PUT EDIT ( 'PAGE NUMBER : ', NPAGE,
160                'NUM  RATE  RANK  TASK  TASK TITLE', ' ' ) ;
161      ( PAGE, X(10), A, F(4),
162        SKIP(2), X(10), A, 2 ( SKIP(1), X(10), A ) ) ;
163      GO TO SKP ;
164
165 TTLL2:  PUT EDIT ( 'PAGE NUMBER : ', NPAGE,
166                  'NUM  DESCRIPTOR CARD', ' ' ) ;
167      ( PAGE, X(10), A, F(4),
168        SKIP(2), X(10), A, 2 ( SKIP(1), X(10), A ) ) ;
169
170 SKP:    PUT SKIP (1) ;
171        END ;
172
173        GO TO STARTP ;
174
175 STERM:  PRTR = 2 ;
176
177 STARTP: IF ( DISP = 2 ) THEN GO TO PROCESS ;
178
179      DISPLAY ( ' ' ) ;
180      DISPLAY ( '** LOAD OF TASK ABBREVIATED DATA FILE FOLLOWS' ) ;
181
182      DISPLAY ( ' ' ) ;
183      DISPLAY ( 'NUMBER  RATE  RANK  TASK  TASK TITLE' ) ;
184      DISPLAY ( '-----' ) ;
185      DISPLAY ( ' ' ) ;
186
187      /*****/
188
189      /* TASK ABBREVIATED FILE DATA LOADED HERE */
190
191 PROCESS: IF ( PRTR = 1 ) THEN SIGNAL ENDPAGE (SYSPRINT) ;
192
193      IF ( PRTR = 1 ) THEN
194      PUT LIST ( '** LOAD OF TASK DATA FILE FOLLOWS **' ) SKIP (2) ;
195      IF ( PTR = 1 ) THEN PUT SKIP (3) ;
196
197 STEP1:  READ FILE (TDATA) INTO (TDATACARD) ;
198      NV = NV + 1 ;
199
200      GET STRING (BCOST) EDIT (TCOST) ( F(10,2) ) ;
201      PUT STRING (BCOST) EDIT (TCOST) ( P(8)9V99' ) ;
202
203      IF ( PRTR = 1 ) THEN
204      PUT EDIT ( NV, TASKOVER.RATING, TASKOVER.RANK,
205
```

PAGE NUMBER : 4

SOURCE CARD LISTING FOR

P9: /* TASK DATA/DESCR/DIRECTORY LOAD - FRI/28/JAN/77 */

```

207          TASKOVER.JOBTASK, JTTL, BCOST )
208          ( SKIP(1), X(10), F(4), X(3), A(5), X(2), A(2), X(2),
209            A(6), X(2), A(50), X(3), A(10) ) ;
210
211          IF ( DISP = 2 ) THEN GO TO S1A ;
212          PUT STRING (DLINE) EDIT
213            ( NV, TASKOVER.RATING, TASKOVER.RANK,
214              TASKOVER.JOBTASK, JTTL )
215            ( P'ZZ,ZZ9', X(2), A, X(1), A, X(1), A, X(2), A ) ;
216          DISPLAY ( DLINE ) ;
217
218          S1A: IF ( F13 = YETASK ) THEN
219          DUPS: DO ;
220                NV = NV - 1 ;
221
222                IF ( PRTR = 1 ) THEN
223                  PJT EDIT ( '** DUPLICATE RATING/RANK/TASK ON THE ',
224                    'PRECEEDING CARD,' , 'RECORD WILL BE IGNORED **' )
225                    ( SKIP(2), A, A, SKIP(1), A ) ;
226
227                IF ( DISP = 2 ) THEN GO TO STEP1 ;
228                DISPLAY ( ' ' ) ;
229                DISPLAY ( '** DUPLICATE RATING/RANK/TASK ON THE '
230                  '|| PRECEEDING CARD,' ) ;
231                DISPLAY ( 'RECORD WILL BE IGNORED' ) ;
232                DISPLAY ( ' ' ) ;
233
234                GO TO STEP1 ;
235                END DUPS ;
236
237          WRITE FILE (TASKS) FROM (TDATACARD) ;
238          YETASK = F13 ;
239          NDD = NDD + 1 ;
240          NDIR = NDIR + 1 ;
241          CHTASK (NDD) = F13 ;
242          TASKPTR (NDD) = NDIR ;
243
244          GO TO STEP1 ;
245
246          /* HERE, EOF ON CARD DATA INPUT DATASET */
247
248          EOFDATA: TASKPTR (1) = NDD ;
249
250          LP2: DO J = 1 TO 12 ;
251                PLTASK = ADDR (COVTASK(J)) ;
252                WRITE FILE (DTASK) FROM (LOADTASK) ;
253                END LP2 ;
254
255                DISPLAY ( ' ' ) ;
256                DISPLAY ( '** EOF ON DATA INPUT FILE, ' ) ;
257                PUT STRING (DLINE) EDIT
258                  ( 'CARDS PROCESSED : ', NV, ' **' )
259                  ( A, P'ZZ,ZZ9', A ) ;
260                DISPLAY ( DLINE ) ;
261
262                DISPLAY ( ' ' ) ;
263                DISPLAY ( '** LOAD OF TASK DESCRIPTOR CARDS FOLLOWS **' ) ;
264                DISPLAY ( ' ' ) ;
265
266                REFS (11) = NV - 1 ;
267                REFS (12) = NDD ;
268
269          /*****/
270
271          /* INITILIZE START OF DESCRIPTOR LOAD HERE */
272
273          IF ( PRTR = 2 ) THEN GO TO PHAZE2 ;
274
275          NLIST = 2 ;

```

PAGE NUMBER : 5

SOURCE CARD LISTING FOR
P9: /* TASK DATA/DESCR/DIRECTORY LOAD - FRI/28/JAN/77 */

```

276      SIGNAL ENDPAGE (SYSPRINT) ;
277      PUT LIST ( '** LOAD OF DESCRIPTOR CARD DATA FOLLOWS **' )
278      SKIP (2) ;
279      PUT SKIP (3) ;
280
281 PHAZE2: READ FILE (TCDESC) INTO (TASKCARD) ;
282      ND = 1 ;
283      GO TO STEP3 ;
284
285      /* HERE IS THE DESCRIPTOR LOAD LOOP */
286
287 STEP2: READ FILE (TCDESC) INTO (TASKCARD) ;
288      ND = ND + 1 ;
289
290      IF ( TASKN = YETASK ) THEN
291      LP3: DO ;
292          NSK = 1 ;
293          GO TO STEP4 ;
294      END LP3 ;
295
296      WRITE FILE (TDESC) FROM (TASKDESC) ;
297      NS = NS + 1 ;
298
299 STEP3: YETASK = TASKN ;
300      TOTD = TOTD + 1 ;
301      TTAB = 0 ;
302      TASKDS = TASKN ;
303      NSK = 2 ;
304
305      LP5: DO J = 1 TO NOD ; /* SEE IF MATCHING DATA AVAILABLE */
306          IF ( TASKN = CHTASK(J) ) THEN GO TO LP5END ;
307          NFIND = NFIND + 1 ;
308          FTASKS (J) = 1 ;
309          GO TO STEP4 ;
310      LP5END: END LP5 ;
311
312      NOD = NOD + 1 ;
313      NODATA (NOD) = TASKN ;
314
315 STEP4: IF ( PRTR = 1 ) THEN
316      PUT EDIT ( NO, TASKCARD )
317          ( SKIP(1), X(10), F(4), X(3), A(13), A(67) ) ;
318
319      IF ( DISP = 1 ) THEN DISPLAY ( TASK80 ) ;
320
321      TVNS = 0 ;
322      GET STRING (TASKNUMS) EDIT (TVNS) ( 22 ( F(2), X(1) ) ) ;
323
324      LP4: NT = 0 ;
325          DO J = 1 TO 22 ;
326          NTEST = TVNS (J) ;
327          IF ( NTEST = 0 ) THEN GO TO ENLDP4 ;
328
329          NT = NT + 1 ;
330          IF ( PDESC(NTEST) = 0 ) THEN GO TO STEP5 ;
331
332      NER = NER + 1 ;
333
334      IF ( PRTR = 1 ) THEN
335      PUT EDIT ( '** ERROR IN TASK NUMBER -', TASKN,
336          '- DESCRIPTOR SUBSCRIPT ', NTEST,
337          ' DOES NOT EXIST **' )
338          ( SKIP(1), A, A(13), A, F(3), A ) ;
339
340      IF ( DISP = 2 ) THEN GO TO BUMD ;
341      PUT STRING (DLINE) EDIT
342          ( '** ERROR IN TASK NUMBER -', TASKN,
343          '- DESCRIPTOR SUBSCRIPT ', NTEST,
344          ' DOES NOT EXIST **' )

```

PAGE NUMBER : 6

SOURCE CARD LISTING FOR

P9: /* TASK DATA/DESCR/DIRECTORY LOAD - FRI/28/JAN/77 */

```

345      ( A, A, A, F(3), A ) ;
346      DISPLAY ( ' : ' ) ; DISPLAY ( DLINE ) ;
347      DISPLAY ( ' : ' ) ;
348
349      BUMD: IF ( NER > 100 ) THEN GO TO EOJ ;
350             GO TO ENDLP4 ;
351
352      STEP5: TTAB (NTEST) = PDESC (NTEST) ;
353      ENDLP4: END LP4 ;
354
355             GO TO STEP2 ;
356
357      /* HERE IS EOF ON DESCRIPTOR CARD INPUT */
358
359      EOFDESC: WRITE FILE (TDESC) FROM (TASKDESC) ;
360             NS = NS + 1 ;
361
362             REFS (13) = NS ;
363             REFS (14) = ND ;
364
365             DISPLAY ( ' : ' ) ;
366             DISPLAY ( '** EOF REACHED ON TASK DESCRIPTOR INPUT FILE, ' ) ;
367             PUT STRING (DLINE) EDIT
368             ( ' CARDS PROCESSED : ', ND, ' **' )
369             ( A, P'ZZ,ZZ9', A ) ;
370             DISPLAY ( DLINE ) ;
371
372      /*****
373
374      /* ANY REQUIRED DIAGNOSTICS OUTPUT IN THIS SECTION */
375
376             IF ( VFIND = NV ) THEN GO TO STEP6 ;
377
378      /* HERE DESCRIPTOR / DATA MISMATCHES PRINTED */
379
380             IF ( PRTR = 2 ) THEN GO TO LP6A ;
381             PUT EDIT ( '** THE FOLLOWING DATA FILE TASK NUMBERS',
382             ' HAVE NO MATCH IN THE DESCRIPTOR CARD FILE **' )
383             ( SKIP(3), A, SKIP(1), A ) ;
384             PUT SKIP (2) ;
385
386      LP6A: DISPLAY ( ' : ' ) ; /* NOTE - ALWAYS DISPLAY */
387             DISPLAY ( '** THE FOLLOWING DATA FILE TASK NUMBERS' ) ;
388             DISPLAY ( ' HAVE NO MATCH IN THE DESCRIPTOR CARD FILE **' ) ;
389             DISPLAY ( ' : ' ) ;
390
391      LP6: K = 0 ;
392             DO J = 1 TO NDD ;
393             IF ( FTASKS(J) = 1 ) THEN GO TO LP6END ;
394             K = K + 1 ;
395
396             PUT STRING (DLINE) EDIT ( K, CHTASK(J) )
397             ( F(3), X(2), A ) ;
398             DISPLAY ( DLINE ) ;
399
400             IF ( PRTR = 1 ) THEN
401                 PUT EDIT ( K, CHTASK(J) )
402                 ( SKIP(1), X(10), F(3), X(3), A ) ;
403      LP6END: END LP6 ;
404
405      /* HERE, DESCRIPTOR TASK NUMBERS W/O MATCHING DATA FILE ENTRIES
406      ARE PRINTED - IF ANY */
407
408      STEP6: IF ( NDD = 0 ) THEN GO TO BITTEREND ;
409
410             IF ( PRTR = 2 ) THEN GO TO LP7A ;
411             PUT EDIT ( '** THE FOLLOWING DESCRIPTOR CARD TASK NUMBERS ',
412             ' HAVE NO MATCH IN THE DATA FILE **' )
413             ( SKIP(3), A, SKIP(1), A ) ;

```


PAGE NUMBER : 7

SOURCE CARD LISTING FOR
P9: /* TASK DATA/DESCR/DIRECTORY LOAD - FRI/28/JAN/77 */

```

414      PUT SKIP(2) ;
415
416 LP7A:  DISPLAY ( ' ' ) ;      DISPLAY ( ' ' ) ;
417      DISPLAY ( '** THE FOLLOWING DESCRIPTOR CARD TASK NUMBERS ' ) ;
418      DISPLAY ( ' HAVE NO MATCH IN THE DATA FILE **' ) ;
419      DISPLAY ( ' ' ) ;
420
421 LP7:   DO J = 1 TO NOD ;
422
423       IF ( PRTR = 1 ) THEN
424         PUT EDIT ( J, NODATA(J) ) ( SKIP(1), X(10), F(3),
425           X(3), A(13) ) ;
426
427         PUT STRING (DLINE) EDIT ( J, NODATA(J) )
428           ( F(3), X(2), A ) ;
429         DISPLAY ( DLINE ) ;
430
431       END LP7 ;
432
433 /******
434
435 /* HERE AM THE WINDUP */
436
437 BITTEREND:
438     REWRITE FILE (MREF) FROM (MAST) ;
439
440 FEND:
441 EOJ:  CLOSE FILE (MREF), FILE (DIND), FILE (TDATA),
442       FILE (TCDESC), FILE (DTASK), FILE (TDESC),
443       FILE (TASKS) ;
444
445     DISPLAY ( ' ' ) ;
446     DISPLAY ( 'TASK FILE DATA/DIRECTORY/DESCRIPTOR LOAD PROGRAM'
447       || ' IS NOW TERMINATING' ) ;
448
449     END P9 ;

```

PAGE NUMBER : 1

SOURCE CARD LISTING FOR
P9A: /* ABBREVIATED TASK FILE LISTINGS - FRI/4/FEB/77 */

```

1 P9A: /* ABBREVIATED TASK FILE LISTINGS - FRI/4/FEB/77 */
2 PROC (INPARM) OPTIONS (MAIN) ;
3
4 /* REVISIONS :
5 FRI/04/FEB/77 - FIRST IMPLEMENTATION.
6
7 SUN/20/MAR/77 - MODS PRIOR TO INSTALLATION AT NCSS.
8 */
9
10 DECLARE ( DISP, PTR, NPAGE, DPAGE, LT, JKEY, LP, L, MAXC,
11 MAXIND, MAXLT, MAXLTA, MAXLTB, MAXSS,
12 MAXTASK, NC, NREC,
13 J, K ) FIXED BIN STATIC ;
14
15 DECLARE ( DIND, TASKS ) FILE RECORD DIRECT
16 KEYED ENV ( REGIONAL(1) ),
17
18 INPARM CHAR (100) VARYING,
19 1 POVER BASED (PP),
20 2 PARM CHAR (1),
21 2 PARM2 CHAR (4),
22
23 TCOST FIXED DEC (10,2) STATIC,
24 ( DLINE, CARD ) CHAR (80) STATIC,
25 D2 CHAR (2) DEF DLINE POS (1),
26 BLANK CHAR (4) STATIC INIT ( ' ' ),
27
28 T1 CHAR (45) STATIC INIT (
29 RATING RANK JOBTASK 'BILLET COST' ),
30
31 T2 CHAR (45) STATIC INIT (
32 '-----' ),
33
34 ELINE CHAR (39) STATIC INIT (
35 '*** ERROR XX OCCURED ; NREC WAS XXXXX ***' ),
36 ENO CHAR (2) DEF ELINE POS (10),
37 ENREC PICTURE 'Z,ZZ9' DEF ELINE POS (32),
38
39 T3 CHAR (11) STATIC INIT (
40 'PAGE : XXXX' ),
41 T3P PICTURE 'ZZZ9' DEF T3 POS (8) ;
42
43 /*****/
44
45 DECLARE 1 DINDEX STATIC, /* OVERALL DESCRIPTOR INDEX */
46 2 DSTART FIXED BIN, /* CKF.DESC.INDEX */
47 2 DEND FIXED BIN,
48 2 NCAT FIXED BIN,
49 2 NDESC FIXED BIN,
50 2 CATEGORIES (15),
51 3 PCAT FIXED BIN,
52 3 SCAT FIXED BIN,
53 3 ECAT FIXED BIN,
54 2 PDESC (111) FIXED BIN,
55 COVER (4) CHAR (80) BASED (PCOV) ;
56
57 DECLARE 1 MAST STATIC,
58 2 REFS (40) FIXED BIN ;
59
60 DECLARE 1 ATASKS STATIC, /* ABBR. TASK FILE */
61 2 RATING CHAR (7), /* CKF. ATASKS */
62 2 JOBTASK CHAR (6),
63 2 TASKTTL CHAR (50),
64 2 FILL CHAR (6),
65 2 BILCOST PICTURE '(8)9V99',
66 2 CC80 CHAR (1) ;
67
68 DECLARE 1 TASKOVER BASED (PTO),

```

PAGE NUMBER : 2

SOURCE CARD LISTING FOR
P9A: /* ABBREVIATED TASK FILE LISTINGS - FRI/4/FEB/77 */

```

69      2 RATING      CHAR (5),
70      2 RANK        CHAR (2),
71      2 JOBTASK     CHAR (6) ;
72
73 DECLARE 1 TASKDIR (1200) STATIC,      /* JOBTASK FILE DIRECTORY */
74      2 CHTASK      CHAR (13),        /* CKF.TASKS.DIR */
75      2 TASKPTR     FIXED BIN,
76
77      COVTASK (12)   CHAR (1500) BASED (PTTASK),
78      LOADTASK      CHAR (1500) BASED (PLTASK) ;
79
80 /******
81
82 START: PP = ADDR (INPARM) ;
83      PTO = ADDR (ATASKS) ;
84      PCOV = ADDR (DINDEX) ;
85      PTTASK = ADDR (TASKDIR) ;
86
87      NPAGE, DPAGE, NC,
88      J, K = 0 ;
89
90      LT = 100 ;          /* DISPLAY PAGE LINE COUNTER */
91      MAXLT = 60 ;        /* MAX # LINES ON DISPLAY */
92      JKEY = 1 ;          /* DIRECTORY SS, SKIPS DIR(1) */
93
94 COMMENCE: OPEN FILE (MREF) RECORD INPUT,
95      FILE (DIND) INPUT,
96      FILE (TASKS) INPUT,
97      FILE (DTASK) RECORD INPUT ;
98
99      READ FILE (MREF) INTO (MAST) ;
100     MAXTASK = REFS (11) ;
101     MAXC = REFS (4) ;
102     MAXSS = REFS (12) ;
103
104     IF ( PARM = 'B' ) THEN GO TO BSETUP ;
105
106     /* A-OPTION, PRINT DATA FILE SETUP HERE */
107
108     MAXLTA = MAXLT - 3 ;
109
110 DIRLOAD: DO J = 1 TO 12 ;
111      PLTASK = ADDR ( COVTASK(J) ) ;
112      READ FILE (DTASK) INTO (LOADTASK) ;
113      END DIRLOAD ;
114
115      GO TO FIRST ;
116
117     /* B-OPTION ROUTE INITIALIZED HERE */
118
119 BSETUP: DO J = 9 TO 12 ;
120      READ FILE (DIND) INTO (CARD) KEY (J) ;
121      COVER ( J - 8 ) = CARD ;
122      END BSETUP ;
123
124      MAXIND = REFS (4) ;
125      NREC = DSTART - 1 ;
126      MAXLTB = MAXLT - 1 ;
127
128 /******
129
130     /* NOW INITILIZE DEVICE ASSIGNMENTS */
131
132 FIRST: DISP, PTR = 1 ;
133
134     IF ( PARM2 = 'BOTH' ) THEN GO TO STEP1 ;
135     IF ( PARM2 = 'TERM' )
136     THEN PTR = 2 ;
137     ELSE DISP = 2 ;

```

PAGE NUMBER : 3

SOURCE CARD LISTING FOR

P9A: /* ABBREVIATED TASK FILE LISTINGS - FRI/4/FEB/77 */

```

138 STEP1: LT, LP = 100 ;
139
140 /* HERE, PRINTER DATASET IS INITILED */
141
142 IF ( PTR = 2 ) THEN GO TO STEP4 ;
143
144 OPEN FILE (SYSPRINT)
145     LINESIZE (120) PAGESIZE (58) ;
146
147 ON ENDPAGE (SYSPRINT)
148     BEGIN ;
149     NPAGE = NPAGE + 1 ;
150
151     IF ( PARM = 'B' ) THEN GO TO STEP2 ;
152
153     PJT EDIT ( 'PAGE NO : ', NPAGE, T1, T2, ' ' )
154         ( PAGE, LINE(2), X(10), A, F(4),
155           2 ( SKIP(1), X(10), A(45) ), SKIP(1), A ) ;
156     GO TO STEP3 ;
157
158 STEP2: PUT EDIT ( 'PAGE NO : ', NPAGE,
159     '*** LISTING OF DESCRIPTOR CATEGORIES AS',
160     '    APPLIED TO JOBTASK DATA ***', ' ' )
161     ( PAGE, LINE(5), X(20), A, F(2),
162       SKIP(3), X(20), A, SKIP(1), X(20), A,
163       SKIP(3), A ) ;
164
165 STEP3: PUT SKIP (1) ;
166     END ;
167
168 SIGNAL ENDPAGE (SYSPRINT) ;
169
170 /* HERE, SETUP DISPLAY DATASET, IF REQUIRED */
171
172 STEP4: IF ( DISP = 2 ) THEN GO TO LOOP ;
173
174 ON CONDITION (NEWDP)
175     BEGIN ;
176
177     IF ( LT < 66 ) THEN
178     LP1: DO L = LT TO 66 ;
179         DISPLAY ( BLANK ) ;
180     END LP1 ;
181
182     DISPLAY ( BLANK ) ;
183     DPAGE = DPAGE + 1 ;
184     T3P = DPAGE ;
185     DISPLAY ( T3 ) ;
186     DISPLAY ( BLANK ) ;
187     LT = 4 ;
188
189     IF ( PARM = 'A' ) THEN
190     ATTL: DO ;
191         DISPLAY ( 'ITEM    RATE    RANK    TASK    COST-PER-BILLET' ) ;
192         DISPLAY ( '-----' ) ;
193         DISPLAY ( ' ' ) ;
194         LT = LT + 3 ;
195     END ATTL ;
196
197     END ;
198
199 SIGNAL CONDITION (NEWDP) ;
200
201 /*****
202
203 /* MAINLINE LOOP FOLLOWS */
204
205 LOOP: IF ( PARM = 'B' ) THEN GO TO STEP5 ;
206

```


PAGE NUMBER : 4

SOURCE CARD LISTING FOR

P9A: /* ABBREVIATED TASK FILE LISTINGS - FRI/4/FEB/77 */

/* HERE IS B-SECTION PRINT SETUP */

```

BLOOP: NREC = NREC + 1 ;
ER1:   IF ( NREC > MAXC ) THEN GO TO BUST1 ;
        READ FILE (DIND) INTO (DLINE) KEY (NREC) ;
        GO TO STEP6 ;

```

/* NOW, FOR A-OPTION SETUP */

```

STEP5: JKEY = JKEY + 1 ;
        IF ( JKEY > MAXSS ) THEN GO TO EOFAB ;
        NREC = TASKPTR (JKEY) ;
ER2:   IF ( NREC > MAXTASK ) THEN GO TO BUST2 ;
        READ FILE (TASKS) INTO (ATASKS) KEY (NREC) ;
        NC = NC + 1 ;

```

/* NOW, FOR NEW LINE(S) OUTPUT ; FIRST TRY TERMINAL */

```

STEP6: IF ( DISP = 2 ) THEN GO TO STEP7 ;
        IF ( PARM = 'A' ) THEN
LP2:   DO ;
        IF ( LT > MAXLTA ) THEN SIGNAL CONDITION (NEWDP) ;
        DISPLAY ( BLANK ) ;
        PUT STRING (DLINE) EDIT
          ( NC, TASKOVER.RATING, TASKOVER.RANK,
            TASKOVER.JOBTASK, BILCOST )
          ( F(4), X(3), A(5), X(2), A(2), X(2),
            A(6), X(2), P'$$$,$$$,$$9.V99' ) ;
        DISPLAY (DLINE) ;
        DISPLAY ( (10)' ' || TASKTTL ) ;
        LT = LT + 3 ;
        GO TO STEP7 ;
        END LP2 ;
        IF ( LT > MAXLTB ) THEN SIGNAL CONDITION (NEWDP) ;
        IF ( (D2 = '**) ) | (D2 = '--') ) THEN
          DO ; DISPLAY ( ' ' ) ; LT = LT + 1 ; END ;
        DISPLAY ( DLINE ) ;
        LT = LT + 1 ;

```

/* HERE, TRY FOR PRINTER OUTPUT */

```

STEP7: IF ( PTR = 2 ) THEN GO TO TALLY ;
        IF ( PARM = 'B' ) THEN
LP3:   DO ;
        IF ( (D2 = '**) ) | (D2 = '--') )
          THEN PUT SKIP (1) ;
        PJT EDIT ( DLINE ) ( SKIP(1), X(10), A(80) ) ;
        GO TO TALLY ;
        END LP3 ;
        PUT EDIT ( NC, TASKOVER.RATING, TASKOVER.RANK,
          TASKOVER.JOBTASK, BILCOST, TASKTTL )
          ( SKIP(2), X(10), P'Z,ZZ9', X(3), A(5), X(4), A(2),
            X(3), A(6), X(3), P'$$$,$$$,$$9.V99', X(3), A(50) ) ;
        /* HERE, RECYCLE FOR NEXT RECORD, IF ANY */

```

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SOURCE CARD LISTING FOR

P9A: /* ABBREVIATED TASK FILE LISTINGS - FRI/4/FEB/77 */

```

276
277 TALLY: IF ( PARM = 'A' ) THEN GO TO STEP5 ;
278
279 TALLYB: IF ( NREC >= DEND ) THEN GO TO EOFAB ;
280 ELSE GO TO LOOP ;
281
282 /******
283
284 /* MAX KEY EXCEEDED ERRORS PROCESSED IN THIS SECTION */
285
286 BUST1: END = '01' ;
287 GO TO ERCOM ;
288 BUST2: END = '02' ;
289 ERCOM: ENREC = NREC ;
290
291 IF ( DISP = 2 ) THEN
292 LP4: DO ;
293 DISPLAY (BLANK) ;
294 DISPLAY (BLANK) ;
295 DISPLAY (ELINE) ;
296 DISPLAY (BLANK) ;
297 END LP4 ;
298
299 IF ( PTR = 1 ) THEN
300 PJT LIST ( ELINE ) SKIP (3) ;
301
302 /******
303
304 /* HERE IS PROGRAM WINDUP */
305
306 EOFAB: CLOSE FILE (DIND), FILE (MREF), FILE (TASKS),
307 FILE (DTASK) ;
308
309 END P9A ;

```

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SOURCE CARD LISTING FOR

P14: /* NITRAS CDP EXTRACT VIA DESCRIPTOR CIN - MON/13/DEC/76 */

P14: /* NITRAS CDP EXTRACT VIA DESCRIPTOR CIN - MON/13/DEC/76 */
PROC OPTIONS (MAIN) ;

/* REVISIONS :
TUE/11/JAN/77 - RAN VERYFIRST TIME .

MON/14/MAR/77 - MODS TO PREPARE FOR SHIP TO NCSS.
*/

DECLARE 1 RNIT, /* ORIGINAL NITRAS TAPE RECORD */

2 F1 CHAR (36),
2 FILL1 CHAR (6),
2 PC CHAR (2),
2 FILL2 CHAR (1),
2 F2 CHAR (7),
2 FILL3 CHAR (19),
2 STCD CHAR (1),
2 STDTE FIXED DEC (5),
2 FILL4 CHAR (8),
2 ATTR FIXED DEC (3,1),
2 STBK FIXED DEC (3,1),
2 THRS FIXED DEC (5),
2 LHRS FIXED DEC (5),
2 FILL5 CHAR (3),
2 F3 CHAR (6),
2 FILL6 CHAR (42),
2 CLEN FIXED DEC (5),
2 FILL7 CHAR (663) ;

DECLARE 1 RACRS, /* ABBREVIATED COURSE RECORD */
/* (CARD-IMAGE) */

2 F1 CHAR (36),
2 PC CHAR (2),
2 F2 CHAR (7),
2 STCD CHAR (1),
2 STDTE PICTURE '(5)9',
2 F3 CHAR (6),
2 ATTR PICTURE '99V9',
2 STBK PICTURE '99V9',
2 CLEN PICTURE '999',
2 THRS PICTURE '999',
2 LHRS PICTURE '999',
2 CAOB PICTURE '(5)9V99',
2 CC80 CHAR (1) ;

DECLARE 1 OVERLAY BASED (POV),
2 TAPCDP CHAR (4),
2 TAPCIN CHAR (8),
2 TAPCST CHAR (16) ;

DECLARE (TC, CC, NTOT, NDONE, DDONE, NSKP, TOTCIN, CINER,
NC) FIXED BIN STATIC,
(CCIN, TCIN, PFIRST) CHAR (8) STATIC,
(DLINE, CARD) CHAR (80) STATIC,

DCARD CHAR (80) STATIC,
CRODCIN CHAR (8) DEF DCARD,

SRET LABEL ;

DECLARE T1 CHAR (44) STATIC INIT ('DESCRIPTOR CIN NITRAS COURSE'),

T2 CHAR (64) STATIC INIT ('CARD NUM COUNT CIN REC NUM CDP COURSE SHORT TITLE');

DECLARE RDATE CHAR (6) STATIC,
GDATE CHAR (8) STATIC,
RTIME CHAR (9) STATIC,

PAGE NUMBER : 2

SOURCE CARD LISTING FOR

P14: /* NITRAS CDP EXTRACT VIA DESCRIPTOR CIN - MON/13/DEC/76 */

```

69      GTIME      CHAR (4) STATIC ;
70
71      FMT1:      FORMAT ( X(9), P'Z,ZZ9', A ) ;
72
73      /*****
74
75      START:      CC80 = ' ' ;
76                  CAOB = 0 ;
77                  POV = ADDR (RNIT) ;
78                  NC, NOJNE, DDONE, TOTCIN, CINER = 0 ;
79
80                  RDATE = DATE ;
81                  GDATE = SUBSTR (RDATE,3,2) || ':' ||
82                          SUBSTR (RDATE,5,2) || ':' ||
83                          SUBSTR (RDATE,1,2) ;
84
85                  RTIME = TIME ;
86                  GTIME = SUBSTR (RTIME,1,4) ;
87
88                  OPEN FILE (NITRAS) RECORD INPUT,
89                          FILE (DESCR) RECORD INPUT,
90                          FILE (COURSE) RECORD OUTPUT ;
91
92                  ON ENDFILE (NITRAS) GO TO EOFN ;
93                  ON ENDFILE (DESCR) GO TO EOFD ;
94
95      /*****
96
97      DISPLAY ( ' ' ) ;
98      DISPLAY ( 'ABBREVIATED COURSE DATA BASE EXTRACT PROGRAM' ) ;
99      DISPLAY ( '      DATE : ' || GDATE ) ;
100     DISPLAY ( '      TIME : ' || GTIME ) ;
101
102     DISPLAY ( ' ' ) ;
103     DISPLAY ( T1 ) ; DISPLAY ( T2 ) ;
104     DISPLAY ( ' ' ) ;
105
106     /*****
107
108     READ FILE (NITRAS) INTO (RNIT) ;
109     TCIN = TAPCIN ;
110     TC, CC = 1 ;
111
112     READ FILE (DESCR) INTO (DCARD) ;
113     CCIN, PFIRST = CRDCIN ;
114
115     TEST1:      IF ( TCIN <= CCIN ) THEN GO TO TEST2 ;
116
117     YES:        RACRS = RNIT, BY NAME ;
118                 WRITE FILE (COURSE) FROM (RACRS) ;
119                 NC = NC + 1 ;
120
121                 IF ( PFIRST = (8)' ' ) THEN GO TO STEP2 ;
122                 TOTCIN = TOTCIN + 1 ;
123
124                 PUT STRING (DLINE) EDIT
125                     ( CC, TOTCIN, PFIRST, TC, TAPCDP, TAPCST )
126                     ( X(11), P'Z,ZZ9', X(5), P'Z,ZZ9', X(2), A(8),
127                       X(3), P'Z,ZZ9', X(4), A(4), X(4), A(16) ) ;
128                 DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;
129
130                 PFIRST = ' ' ;
131                 GO TO STEP3 ;
132
133     STEP2:      PUT STRING (DLINE) EDIT
134                 ( TC, TAPCDP, TAPCST )
135                 ( X(39), P'Z,ZZ9', X(4), A(4), X(4), A(16) ) ;
136                 DISPLAY ( DLINE ) ;
137

```


PAGE NUMBER : 3

SOURCE CARD LISTING FOR

P14: /* NITRAS COP EXTRACT VIA DESCRIPTOR CIN - MON/13/DEC/76 */

```

138
139 STEP3: READ FILE (NITRAS) INTO (RNIT) ;
140         TC = TC + 1 ;
141
142         IF ( TAPCIN = TCIN ) THEN GO TO YES ;
143         TCIN = TAPCIN ;
144
145         /* HERE, TAPE CIN HAS ADVANCED */
146
147 STEP4: READ FILE (DESCR) INTO (DCARD) ;
148         CC = CC + 1 ;
149
150         IF ( CRDCIN = CCIN ) THEN GO TO STEP4 ;
151         GO TO STEP1 ;
152
153         /* HERE, CINS NO COMPARE; TRY CCIN BEHIND TCIN */
154
155 TEST2: IF ( CCIN > TCIN ) THEN GO TO STEP5 ;
156
157         SRET = STEP4 ;
158         GO TO CINGONE ;
159
160         /* HERE, TAPE CIN IS BEHIND CARD CIN */
161
162 STEP5: READ FILE (NITRAS) INTO (RNIT) ;
163         TC = TC + 1 ;
164         TCIN = TAPCIN ;
165         GO TO TEST1 ;
166
167 /*****
168
169         /* HERE, EOF ON NITRAS TAPE DATASET */
170
171 EOFN:  NDONE = TC ;
172        SRET = STEP6 ;
173
174        DISPLAY ( ' ' ) ;
175        DISPLAY ( '** EOF ON NITRAS-TAPE INPUT **' ) ;
176
177        IF ( DDONE > 0 ) THEN GO TO QUIT ;
178
179        IF ( PFIRST = (8) ' ' ) THEN GO TO CINGONE ;
180
181 STEP6: READ FILE (DESCR) INTO (DCARD) ;
182         CC = CC + 1 ;
183
184         /* NOTE - FALLTHRU TO CINGONE SUBROUTINE, BELOW */
185
186 /*****
187
188         /* THIS IS THE MISSING CIN MSG SUBROUTINE ; RETURN = SRET */
189
190 CINGONE:
191         TOTCIN = TOTCIN + 1 ;
192
193         PUT STRING (DLINE) EDIT
194         ( '****', CC, TOTCIN, CCIN, '- NO CIN MATCH IN NITRAS -' )
195         ( X(4), A, X(3), P'Z,ZZ9', X(5), P'Z,ZZ9',
196         X(2), A(8), X(2), A ) ;
197         DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;
198
199         CINER = CINER + 1 ;
200
201         GO TO SRET ;
202
203 /*****
204
205         /* HERE, EOF ON CARD-DESCRIPTOR INPUT */
206

```

PAGE NUMBER : 4

SOURCE CARD LISTING FOR

P14: /* NITRAS CDP EXTRACT VIA DESCRIPTOR CIN - MON/13/DEC/76 */

```

207 EOFD: DDONE = CC ;
208
209 DISPLAY ( ' ' ) ;
210 DISPLAY ( '** EOF ON CARD-DESCRIPTOR INPUT **' ) ;
211
212 GO TO QUIT ;
213
214 /*****/
215
216 QUIT: DISPLAY ( ' ' ) ; DISPLAY ( ' ' ) ;
217
218 PUT STRING (DLINE) EDIT
219 ( CC, ' : TOTAL DESCRIPTOR CARDS READ' ) (R(FMT1)) ;
220 DISPLAY ( DLINE ) ;
221
222 PUT STRING (DLINE) EDIT
223 ( TOTCIN, ' : TOTAL CIN NUMBERS INPUT' ) (R(FMT1)) ;
224 DISPLAY ( DLINE ) ;
225
226 PUT STRING (DLINE) EDIT
227 ( CINER, ' : TOTAL CIN ERRORS (NO MATCH IN NITRAS)' )
228 ( R(FMT1) ) ;
229 DISPLAY ( DLINE ) ;
230
231 PUT STRING (DLINE) EDIT
232 ( NC, ' : TOTAL COURSES EXTRACTED' ) (R(FMT1)) ;
233 DISPLAY ( DLINE ) ;
234
235 PUT STRING (DLINE) EDIT
236 ( TC, ' : LAST RECORD READ IN NITRAS' ) (R(FMT1)) ;
237 DISPLAY ( DLINE ) ;
238 DISPLAY ( ' ' ) ;
239
240 CLOSE FILE (NITRAS), FILE (DESCR), FILE (COURSE) ;
241
242 DISPLAY ( ' ' ) ;
243 DISPLAY ( 'COURSE DATABASE CONSTRUCT PROGRAM '
244 || 'IS NOW TERMINATING' ) ;
245 DISPLAY ( ' ' ) ;
246
247 END P14 ;

```

TAEG REPORT NO. 40

PAGE NUMBER : 1

SOURCE CARD LISTING FOR
P16: /* DESCRIPTOR MASTER INDEX MAKEUP - FRI/14/JAN/77 */

```

1  P16:  /* DESCRIPTOR MASTER INDEX MAKEUP - FRI/14/JAN/77 */
2  PROC OPTIONS (MAIN) ;
3
4  /* REVISIONS :
5  FRI/14/JAN/77 - FIRST VERSION IMPLEMENTED.
6
7  MON/14/MAR/77 - MODS TO PREPARE FOR SHIP TO NCSS.
8  */
9
10 DECLARE 1 DINDEX      BASED (PIN),
11           2 DSTART     FIXED BIN,
12           2 DEND       FIXED BIN,
13           2 NCAT       FIXED BIN,
14           2 NDESC      FIXED BIN,
15           2 CATEGORIES (15),
16             3 PCAT     FIXED BIN,
17             3 SCAT     FIXED BIN,
18             3 ECAT     FIXED BIN,
19           2 PDESC (111) FIXED BIN,
20
21           ( ICOURSE(160), IVEH(160), ITASK(160) )
22             FIXED BIN STATIC,
23           COVER (4)    CHAR (80) BASED (PCOV) ;
24
25 DECLARE CARD          CHAR (80) STATIC,
26           CF2          CHAR (2) DEF CARD POS (1),
27           CTYP         CHAR (8) DEF CARD POS (4),
28           TREC         PICTURE '9999' DEF CARD,
29           FLAG (3)     BIT (1) STATIC,
30           ( NREC, NER, NOUT, NCC, NC, NPAGE,
31             J, K, L ) FIXED BIN STATIC ;
32
33 DECLARE 1 MAST        STATIC,
34           2 REFS (40)  FIXED BIN ;
35
36 DECLARE TTESTS (3)    CHAR (8) STATIC INIT
37           ( 'COURSES', 'VEHICLES', 'TASKS' ),
38           BLANK        CHAR (4) STATIC INIT ( ' ' ),
39           DLINE        CHAR (80) STATIC,
40           POINT (3)    POINTER,
41           ( ROUTE, RPRINT ) LABEL ;
42
43 DECLARE 1 CARBIN      STATIC,
44           2 CNJMS (40) FIXED BIN ;
45
46 DECLARE EMSGS (7)     CHAR (38) STATIC INIT (
47           'FIRST CARD NOT (--) TYPE CARD',
48           'DUPLICATE (--) CARD',
49           'TYPE OF (--) CARD INVALID',
50           'TYPE (**) CARD MUST FOLLOW TYPE (--) ',
51           'CATEGORY HAS NO DESCRIPTORS',
52           'DESCRIPTOR NUMBER CONVERSION ERROR',
53           'CATEGORY TABLE SIZE EXCEEDED, MAX = 15' ) ;
54
55 /*****
56
57 START:  ON ERRJR GO TO QUIT ;
58
59         OPEN FILE (CARDS) RECORD INPUT ;
60         ON ENDFILE (CARDS) GO TO EOFCARDS ;
61
62         NREC = 13 ;
63         NER, NC,
64           NPAGE = 0 ;
65         ICOURSE, IVEH, ITASK = 0 ;
66         FLAG = '0'B ;
67
68         POINT (1) = ADDR (ICOURSE) ;

```

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SOURCE CARD LISTING FOR

P16: /* DESCRIPTOR MASTER INDEX MAKEUP - FRI/14/JAN/77 */

```

69      POINT (2) = ADDR (IVEH) ;
70      POINT (3) = ADDR (ITASK) ;
71
72      DISPLAY ( ' ' ) ;
73      DISPLAY ( 'MASTER DESCRIPTOR INDEX CONSTRUCT '
74              || 'PROGRAM IS NOW STARTING' ) ;
75
76      /*****/
77
78      /* VERY FIRST CARD PROCESSED HERE */
79
80      READ FILE (CARDS) INTO (CARD) ;
81      ER1:  NER, NC = 1 ;
82            IF ( CF2 = '--' ) THEN GO TO QUIT ;
83
84      /* HERE, CONTENTS OF (--) CARD VERIFIED */
85
86      STEP1: DO K = 1 TO 3 ;
87              IF ( CTYP = TTESTS(K) )
88                  THEN GO TO ENDS1 ;
89
90              J = K ;
91      ER2:  NER = 2 ;
92            IF ( FLAG(J) ) THEN GO TO QUIT ;
93
94            PIN = POINT(J) ;
95            FLAG(J) = '1'B ;
96            GO TO PASS1 ;
97      ENDS1: END STEP1 ;
98
99      ER3:  NER = 3 ;
100           GO TO QUIT ;
101
102      /* HERE, START PROCESSING NEW (--) TYPE */
103
104      PASS1: DSTART = NREC ;
105      R1:    READ FILE (CARDS) INTO (CARD) ;
106            NREC = NREC + 1 ; NC = NC + 1 ;
107            IF ( CF2 = ' ' ) THEN GO TO R1 ;
108
109      ER4:  NER = 4 ;
110           IF ( CF2 = '**' ) THEN GO TO QUIT ;
111
112      /* HERE, STARTING TO PROCESS NEW (**) CATEGORY */
113
114      STEP2: NCAT = NCAT + 1 ;
115             PCAT (NCAT) = NREC ;
116
117      R2:    READ FILE (CARDS) INTO (CARD) ;
118            NREC = NREC + 1 ; NC = NC + 1 ;
119            IF ( CF2 = ' ' ) THEN GO TO R2 ;
120
121      ER5:  NER = 5 ;
122           IF ( CF2 = '**' ) | ( CF2 = '--' ) THEN GO TO QUIT ;
123
124      /* NOW, DESCRIPTORS WITHIN A CATEGORY START */
125
126      ER6:  NER = 6 ;
127           GET STRING (CF2) EDIT (N) ( F(2) ) ;
128           SCAT (NCAT) = N ;
129
130      STEP3: NDESC = NDESC + 1 ;
131             PDESC (N) = NREC ;
132
133      R3:    READ FILE (CARDS) INTO (CARD) ;
134            NREC = NREC + 1 ; NC = NC + 1 ;
135            IF ( CF2 = ' ' ) THEN GO TO R3 ;
136
137            IF ( CF2 = '**' ) THEN GO TO STEP4 ;

```


PAGE NUMBER : 3

SOURCE CARD LISTING FOR
P16: /* DESCRIPTOR MASTER INDEX MAKEUP - FRI/14/JAN/77 */

IF (CF2 = '--') THEN GO TO STEP5 ;

ER6A: NER = 6 ;
GET STRING (CF2) EDIT (N) (F(2)) ;
GO TO STEP3 ;

/* HERE, DOVE WITH ONE CATEGORY - RECYCLING TO NEXT */

STEP4: NER = 7 ;
ER7: IF (NCAT > 14) THEN GO TO QUIT ;ECAT (NCAT) = N ;
GO TO STEP2 ;

/* NOW, DONE ONE (--) TYPE - RECYCLING TO NEXT */

STEP5: ECAT (NCAT) = N ;
DEND = NREC - 1 ;
GO TO STEP1 ;

/*****

EOFCARDS: /* NOW, EOF ON INPUT DESCRIPTOR CARDS */

MAXREC = NREC ;
DEND = NREC ;
ECAT (NCAT) = N ;

CLOSE FILE (CARDS) ;

OPEN FILE (CARDS) RECORD INPUT,
FILE (MREF) RECORD UPDATE,
FILE (DIND) RECORD OUTPUT ;
ON ENDFILE (CARDS) GO TO EOJ ;READ FILE (MREF) INTO (MAST) ;
REFS (4) = NREC ;
REWRITE FILE (MREF) FROM (MAST) ;

/* FIRST OUTPUT HEADER RECORD */

CNUMS = 0 ;
CNUMS(1) = MAXREC ;
WRITE FILE (DIND) FROM (CARBIN) ;
NOUT = 0 ;

/* NOW, FOR THE COURSE INDEX */

PCOV = ADDR (ICOURSE) ;
PIN = ADDR (ICOURSE) ;LP1: DO J = 1 TO 4 ;
CARD = COVER (J) ;
WRITE FILE (DIND) FROM (CARD) ;
END LP1 ;

NOUT = NOUT + 4 ;

/* VEHICLE INDEX IS OUTPUT HERE */

PCOV = ADDR (IVEH) ;
PIN = ADDR (IVEH) ;LP2: DO J = 1 TO 4 ;
CARD = COVER (J) ;
WRITE FILE (DIND) FROM (CARD) ;
END LP2 ;

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SOURCE CARD LISTING FOR
P16: /* DESCRIPTOR MASTER INDEX MAKEUP - FRI/14/JAN/77 */

```

207      NJUT = NJUT + 4 ;
208
209      /* NOW FOR THE TASK INDEX OUTPUT */
210
211      PCOV = ADDR (ITASK) ;
212      PIN = ADDR (ITASK) ;
213
214      LP3:      DO J = 1 TO 4 ;
215                CARD = COVER (J) ;
216                WRITE FILE (DIND) FROM (CARD) ;
217                END LP3 ;
218
219      NJUT = NJUT + 4 ;
220
221      /* NOW, OUTPUT THE DESCRIPTOR CARD FILE */
222
223      DISPLAY ( ' ' ) ;
224      DISPLAY ( 'DESCRIPTOR CARD FILE LISTING FOLLOWS' ) ;
225      DISPLAY ( (36)'-' ) ;
226      DISPLAY ( ' ' ) ;
227
228      NCC = 0 ;
229
230      RALL:      READ FILE (CARDS) INTO (CARD) ;
231                NCC = NCC + 1 ;
232
233      WRITE FILE (DIND) FROM (CARD) ;
234      NJUT = NJUT + 1 ;
235
236      IF ( CF2 = '--' ) THEN
237        DO ; DISPLAY ( ' ' ) ; DISPLAY ( ' ' ) ; END ;
238
239      IF ( CF2 = '*' ) THEN DISPLAY ( ' ' ) ;
240
241      DISPLAY ( CARD ) ;
242
243      GO TO RALL ;
244
245      /*****/
246
247      QUIT:      /* THIS IS THE FORCED-TERMINATION ROUTINE */
248
249      PUT STRING (DLINE) EDIT
250      ( '** ERROR NUMBER ', NER, ' HAS OCCURED **' )
251      ( A, F(2), A ) ;
252
253      DISPLAY ( ' ' ) ;
254      DISPLAY ( DLINE ) ;
255
256      DLINE = EMSGS ( NER ) ;
257
258      DISPLAY ( DLINE ) ;
259      DISPLAY ( ' ' ) ;
260
261      GO TO EOJ ;
262
263      /*****/
264
265      /* FINALLY, EOF ON CARD FILE AGAIN */
266
267      EOJ:      CLOSE FILE (CARDS), FILE (DIND),
268                FILE (MREF) ;
269
270      DISPLAY ( ' ' ) ;
271      PUT STRING (DLINE) EDIT
272
273
274
275

```

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PAGE NUMBER : 5

SOURCE CARD LISTING FOR

P16: /* DESCRIPTOR MASTER INDEX MAKEUP - FRI/14/JAN/77 */

```

276      ( '*** TOTAL DESCRIPTOR INDEX CARDS READ : ',
277      NCC, '***' ) ( A, P'Z,ZZ9', A ) ;
278      DISPLAY ( DLINE ) ;
279
280      DISPLAY ( ' ' ) ;
281      DISPLAY ( 'MASTER DESCRIPTOR INDEX PROCESSING '
282      || 'IS NOW TERMINATING' ) ;
283      DISPLAY ( ' ' ) ;
284
285      END P16 ;

```

PAGE NUMBER : 1

SOURCE CARD LISTING FOR
P17: /* PROJECT FILE INITIALIZATION - WED/23/FEB/77 */

```

1 P17: /* PROJECT FILE INITIALIZATION - WED/23/FEB/77 */
2 PROC (INPARM) OPTIONS (MAIN) ;
3
4 /* REVISIONS :
5 WED/23/FEB/77 - INITIAL IMPLEMENTATION.
6
7 WED/02/MAR/77 - MODIFIED TO INITIALIZE ONLY CARD-IMAGE FILES
8 UP TO AND INCLUDING FILE ALTP.
9
10 SUN/20/MAR/77 - MODS PRIOR TO TRANSMIT TO NCSS.
11 */
12
13 DECLARE INPARM CHAR (100) VARYING,
14 PARM2 CHAR (4) BASED (PP) ;
15
16 DECLARE ( DISP, PTR, NPAGE, DPAGE, L, LT, NC,
17 J, K ) FIXED BIN STATIC ;
18
19 DECLARE DTYPE (20) CHAR (4) STATIC INIT ( /* FIRST 13 ARE CARD */
20 'ID', 'REC', 'REJ', 'REV', /* IMAGE TYPE */
21 'EXD', 'BPT', 'RKP', 'RRPJ',
22 'RRPK', 'VQAL', 'VARF', 'SCEN',
23 'ALTP',
24 'REE', 'EXC', 'EXJ', 'EXV', /* NOS 14 THRU 20, */
25 'CMR', 'TRER', 'FINR' ) ; /* RECFM VARIES */
26
27 DECLARE ( FLAGS(20), IFLAG ) BIT (1) STATIC,
28 ( CARD, DLINE ) CHAR (80) STATIC,
29 F4 CHAR (4) DEF CARD,
30 F2 CHAR (2) DEF CARD,
31 FN CHAR (4) DEF CARD POS (3),
32 FNME CHAR (8) STATIC,
33 WAY (14:20) LABEL ;
34
35 DECLARE TTLS (20) CHAR (40) STATIC INIT (
36 'ID - PROJECT DESCRIPTION',
37 'REC - COURSES ROE SEARCH ARGUMENTS',
38 'REJ - TASKS ROE SEARCH ARGUMENTS',
39 'REV - VEHICLES ROE SEARCH ARGUMENTS',
40 'EXD - EXTRACT DEFAULTS',
41 'BPT - BENEFIT PATTERN',
42 'RKP - RISK PROFILE',
43 'RRPJ - RISK REDUCTION PROJECTS',
44 'RRPK - RISK REDUCTION PACKAGES',
45 'VQAL - VARIABLES QUALITATIVE',
46 'VARF - VARIABLE REFERENCES',
47 'SCEN - SCENARIOS',
48 'ALTP - ALTERNATE PROJECTS',
49 'REE - ROE SEARCH RESULTS',
50 'EXC - EXTRACT DB - COURSES',
51 'EXJ - EXTRACT DB - JOBTASKS',
52 'EXV - EXTRACT DB - VEHICLES',
53 'CMR - COST MODEL RESULTS',
54 'TRER - TREE RESULTS',
55 'FINR - FINANCIAL RESULTS' ) ;
56
57 DECLARE T1 CHAR (18) STATIC INIT (
58 'PAGE NUMBER : XXXX' ),
59
60 T1PGE PICTURE 'ZZZ9' DEF T1 POS (15),
61
62 T2 CHAR (80) STATIC INIT (
63 'LOAD OF PROJECT FILETYPE : XXXX' ),
64
65 T2TTL CHAR (53) DEF T2 POS (28) ;
66
67 /*****
68

```


PAGE NUMBER : 2

SOURCE CARD LISTING FOR
P17: /* PROJECT FILE INITIALIZATION - WED/23/FEB/77 */

```

69 START:  FLAGS = '0'B ;
70          NC, NPAGE, DPAGE,
71          J, K = 0 ;
72          PP = ADDR (INPARM) ;
73
74          DISPLAY ( ' ' ) ;
75          DISPLAY ( 'PROJECT FILE INITIALIZATION PROGRAM IS STARTING' ) ;
76          DISPLAY ( ' ' ) ;
77
78          /* HERE, DEVICE ASSIGNMENTS ARE VERIFIED */
79
80 FIRST:  DISP, PTR = 1 ;
81          IF ( PARM2 = 'BOTH' ) THEN GO TO STEPA ;
82
83          IF ( PARM2 = 'TERM' )
84              THEN PTR = 2 ;
85              ELSE DISP = 2 ;
86
87          /* HERE, PRINTER DATASET IS INITIALIZED */
88
89 STEPA:  IF ( PTR = 2 ) THEN GO TO STEPB ;
90
91          OPEN FILE (SYSPRINT)
92              LINESIZE (120) PAGESIZE (58) ;
93
94          ON ENDPAGE (SYSPRINT)
95              BEGIN ;
96              NPAGE = NPAGE + 1 ;
97
98              PJT EDIT ( 'PAGE NUMBER : ', NPAGE, T2, ' ' )
99                  ( PAGE, X(10), A, F(4),
100                    SKIP(1), X(10), A, SKIP(1), A ) ;
101
102              PJT SKIP (1) ;
103              END ;
104
105          /* HERE, INITIALIZATION OF TERMINAL DATASET PROCEEDS */
106
107 STEPB:  IF ( DISP = 2 ) THEN GO TO COMMENCE ;
108
109          ON CONDITION (NEWDP)
110              BEGIN ;
111              IF ( LT < 61 ) THEN LT = 61 ;
112
113              IF ( LT < 66 ) THEN
114                  DO L = LT TO 66 ;
115                  DISPLAY ( ' ' ) ;
116                  END LPA ;
117
118              DISPLAY ( ' ' ) ;
119
120              DPAGE = DPAGE + 1 ;
121              TPGE = DPAGE ;
122              DISPLAY ( T1 ) ;
123              DISPLAY ( ' ' ) ;
124              DISPLAY ( T2 ) ;
125              DISPLAY ( ' ' ) ;
126              LT = 4 ;
127              END ;
128
129          /*****/
130
131 COMMENCE: OPEN FILE (CARDS) RECORD INPUT ;
132            ON ENDFILE (CARDS) GO TO PASS2 ;
133
134            READ FILE (CARDS) INTO (CARD) ;
135            NC = NC + 1 ;
136
137            IFLAG = '0'B ;

```

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PAGE NUMBER : 3

SOURCE CARD LISTING FOR
P17: /* PROJECT FILE INITIALIZATION - WED/23/FEB/77 */

```

138
139
140
141 LP1: IF ( F4 = 'INIT' ) THEN
142     DO ;
143     IFLAG = '1'B ;
144     READ FILE (CARDS) INTO (CARD) ;
145     NC = NC + 1 ;
146     END LP1 ;
147
148     IF ( F2 = '***' ) THEN GO TO STEP2 ;
149     /* HERE, FIRST CARD READ WAS NOT '***' CARD */
150     T2TTL = '*** FIRST TITLE CARD IS MISSING ***' ;
151
152 STEP1: IF ( PTR = 1 )
153     THEN SIGNAL ENDPAGE (SYSPRINT) ;
154
155     IF ( DISP = 1 )
156     THEN SIGNAL CONDITION (NEWDP) ;
157     ELSE DISPLAY ( T2 ) ;
158
159 R1: READ FILE (CARDS) INTO (CARD) ;
160     NC = NC + 1 ;
161
162     IF ( F2 = '***' ) THEN GO TO STEP2 ;
163
164     IF ( PTR = 1 ) THEN PUT EDIT (CARD) ( SKIP(1), X(10), A(80) ) ;
165
166     IF ( DISP = 1 )
167     THEN DISPLAY ( CARD ) ;
168
169     GO TO R1 ;
170
171     /* HERE, A TITLE CARD HAS BEEN FOUND - VERIFY IT */
172
173 STEP2: DO J = 1 TO 13 ;
174     K = J ;
175     IF ( FN = DTYPE(J) ) THEN GO TO STEP3 ;
176     END STEP2 ;
177
178     T2TTL = '*** TITLE CARD FILNAME - ' || FN
179     || ' - IS INVALID ***' ;
180
181     GO TO STEP1 ;
182
183     /* HERE, NEW TITLE (FILE) HEADER FOUND; VERIFY NON-DUPLICATE */
184
185 STEP3: IF ( FLAGS(K) ) THEN
186 DUPFN: DO ;
187     T2TTL = '*** FILENAME - ' || FN || ' - IS DUPLICATED ***' ;
188     GO TO STEP1 ;
189     END DUPFN ;
190
191     FLAGS (K) = '1'B ;
192     T2TTL = TTLS (K) ;
193
194     FNME = DTYPE (K) ;
195     OPEN FILE (PROJ) RECDRD OUTPUT TITLE ( FNME ) ;
196
197     IF ( PTR = 1 ) THEN SIGNAL ENDPAGE (SYSPRINT) ;
198
199     IF ( DISP = 1 ) THEN SIGNAL CONDITION (NEWDP) ;
200     ELSE DISPLAY ( T2 ) ;
201
202     /* HERE IS TEXT LINE OUTPJT LOOP */
203
204 R2: READ FILE (CARDS) INTO (CARD) ;
205     NC = NC + 1 ;
206

```

PAGE NUMBER : 4

SOURCE CARD LISTING FOR
P17: /* PROJECT FILE INITIALIZATION - WED/23/FEB/77 */

```

207      IF ( F2 = '***' ) THEN
208  LP2:      DO ;
209             CLOSE FILE (PROJ) ;
210             GO TO STEP2 ;
211      END LP2 ;
212
213      IF ( PTR = 1 )
214      THEN PUT EDIT (CARD) ( SKIP(1), X(10), A(80) ) ;
215
216      IF ( DISP = 1 )
217      THEN DISPLAY ( CARD ) ;
218
219      WRITE FILE (PROJ) FROM (CARD) ;
220
221      GO TO R2 ;
222
223  /*****
224
225      /* HERE, EOF ON INPUT DATASET */
226
227  PASS2:  CLOSE FILE (PROJ), FILE (CARDS) ;
228
229      IF ( -IFLAG ) THEN GO TO EOJ ;
230
231      CARD = ' ' ; /* DUMMY OUTPUT RECORD FOR FILE INIT.*/
232      T2 = 'INITIALIZATION OF REMAINING FILES (IF ANY) WITH A '
233          || 'SINGLE BLANK RECORD' ;
234
235      IF ( PTR = 1 ) THEN SIGNAL ENDPAGE (SYSPRINT) ;
236      IF ( DISP = 1 ) THEN SIGNAL CONDITION (NEWDP) ;
237
238  LP3:      DO J = 1 TO 13 ; /* NOTE - ONLY INITIALIZING CARD
239                          IMAGE FILES UP THRU ALTP, INCL. */
240
241      IF ( FLAGS(J) ) THEN GO TO LP3END ;
242
243      OPEN FILE (PROJ) RECORD OUTPUT TITLE ( DTYPE(J) ) ;
244
245      IF ( J <= 13 ) THEN GO TO WRITE80 ;
246      ELSE GO TO WAY (J) ;
247
248  WAY(14):
249      GO TO STEP4 ;
250  WAY(15):
251      GO TO STEP4 ;
252  WAY(16):
253      GO TO STEP4 ;
254  WAY(17):
255      GO TO STEP4 ;
256  WAY(18):
257      GO TO STEP4 ;
258  WAY(19):
259      GO TO STEP4 ;
260  WAY(20):
261      GO TO STEP4 ;
262
263  WRITE80:  WRITE FILE (PROJ) FROM (CARD) ;
264
265  STEP4:    CLOSE FILE (PROJ) ;
266      DLINE = 'FILE : ' || DTYPE(J) ||
267          ' HAS BEEN INITIALIZED WITH ONE (1) BLANK RECORD' ;
268
269      IF ( PTR = 1 ) THEN PUT EDIT (DLINE) ( SKIP(2), X(10), A ) ;
270
271      DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;
272
273  LP3END:   END LP3 ;
274
275  /*****

```

PAGE NUMBER : 5

SOURCE CARD LISTING FOR
P17: /* PROJECT FILE INITIALIZATION - WED/23/FEB/77 */

/* HERE IS THE END PROCESSING */

```
EOJ:  IF ( IFLAG ) THEN
LP4:  DO ;

      IF ( PTR = 1 ) THEN PUT EDIT
      ( '** ALL DATASETS INITIALIZED **' )
      ( SKIP(3), X(20), A ) ;

      DISPLAY ( ' ' ) ;
      DISPLAY ( '** ALL DATASETS INITIALIZED **' ) ;

      END LP4 ;

      IF ( PTR = 1 ) THEN PUT EDIT
      ( '** TOTAL NUMBER INPUT CARDS READ : ', NC, ' **' )
      ( SKIP(3), X(20), A, F(4), A ) ;

      PUT STRING (DLINE) EDIT
      ( '** TOTAL NUMBER INPUT CARDS READ : ', NC, ' **' )
      ( A, F(4), A ) ;
      DISPLAY ( ' ' ) ; DISPLAY ( DLINE ) ;

      DISPLAY ( ' ' ) ;
      DISPLAY ( 'PROJECT FILE INITIALIZATION PROGRAM '
      || ' IS NOW TERMINATING' ) ;
      DISPLAY ( ' ' ) ;

      END P17 ;
```


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PAGE NUMBER : 1

SOURCE CARD LISTING FOR

P18: /* INITILIZE MASTER REF FILE TO ZERO - WED/12/JAN/77 */

P18: /* INITILIZE MASTER REF FILE TO ZERO - WED/12/JAN/77 */
PROC OPTIONS (MAIN) ;

/* REVISIONS :
WED/12/JAN/77 - FIRST IMPLEMENTEDED VERSION.

MON/14/MAR/77 - MODS TO PREPARE FOR SHIP TO NCSS.

*/

DECLARE 1 MAST STATIC,
2 REFS (40) FIXED BIN ;

OPEN FILE (MREF) RECDRD OUTPUT ;

REFS = 0 ;

WRITE FILE (MREF) FROM (MAST) ;

CLOSE FILE (MREF) ;

END P18 ;

TAEG REPORT NO. 40

PAGE NUMBER : 1

SOURCE CARD LISTING FOR
P20: /* PRINT ASSIGNED DESIGNATORS - WED/19/JAN/77 */

P20: /* PRINT ASSIGNED DESIGNATORS - WED/19/JAN/77 */
PROC (INPARM) OPTIONS (MAIN) ;

/* REVISIONS :
WED/18/JAN/77 - STARTED WITH COURSE DESCRIPTORS ONLY.
MON/31/JAN/77 - ADDING VEHICLE AND TASK VARIATIONS.
SUN/20/MAR/77 - MODS PRIOR TO INSTALLATION AT NCSS.
*/

DECLARE INPARM CHAR (100) VARYING,
1 POVER BASED (PP),
2 PARM CHAR (1),
2 PARM2 CHAR (4),
C1 CHAR (1) STATIC,
C4 CHAR (4) STATIC,
(DIND, VEHS, TASKS) FILE RECORD DIRECT
KEYED ENV (REGIONAL(1)) ;

DECLARE DLINE CHAR (80) STATIC,
CFILL CHAR (74) DEF DLINE POS (7),
DFILL CHAR (68) DEF DLINE POS (13),
CARD CHAR (80) STATIC,
TTL1 CHAR (42) STATIC INIT ('PAGE XXXX : VEHICLE DESCRIPTOR ASSIGNMENTS'),
NPGE PICTURE 'ZZZ9' DEF TTL1 POS (6),
TYPE CHAR (7) DEF TTL1 POS (13),
(DISP, PTR, LL, ND, NC, NPAGE, DPAGE, LT, NREC,
MAXD, KMAX, J, CFLAG, KD, MAXD2,
JD, L, LNOW, NER,
K) FIXED BIN STATIC,

SRET LABEL ;

/*****

DECLARE 1 DINDEX STATIC, /* OVERALL DESCRIPTOR INDEX */
2 DSTART FIXED BIN, /* CKF.DESC.INDEX */
2 DEND FIXED BIN,
2 NCAT FIXED BIN,
2 NDESC FIXED BIN,
2 CATEGORIES (15),
3 PCAT FIXED BIN,
3 SCAT FIXED BIN,
3 ECAT FIXED BIN,
2 PDESC (111) FIXED BIN,
COVER (4) CHAR (80) BASED (PCOV) ;

DECLARE 1 MAST STATIC,
2 REFS (40) FIXED BIN,
MREF FILE RECORD ;

DECLARE 1 CINDESC BASED (PTRCIN), /* COURSE DESCRIPTORS */
2 CINDS CHAR (8), /* CKF.CRS.DESC */
2 FILL CHAR (5),
2 DTAB (100) FIXED BIN,
CIN213 CHAR (213) STATIC ;

DECLARE 1 CINDER (304) STATIC, /* CRS CIN DIRECTORY */
2 CHCIN CHAR (8), /* CKF.CRS.DIRCIN */
2 CINPTR FIXED BIN,
LOADCIN CHAR (760) BASED (PLCIN),

TAEG REPORT NO. 40

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SOURCE CARD LISTING FOR

P20: /* PRINT ASSIGNED DESIGNATORS - WED/19/JAN/77 */

```

69      COVCIN (4)      CHAR (760)  BASED (PTCIN) ;
70
71  DECLARE 1 VEHDESC    STATIC,      /* VEH DESCRIPTOR FILE */
72          2 VEHDS      CHAR (13),   /* CKF.VEH.DESC */
73          2 VTAB (100)  FIXED BIN ;
74
75  DECLARE 1 VEHDIR (200) STATIC,      /* VEHICLE DIRECTORY */
76          2 CHVEH      CHAR (13),   /* CKF.VEH.DIR */
77          2 VEHPTIR    FIXED BIN,
78          COVVEH (4)    CHAR (750)  BASED (PTVEH),
79          LOADVEH      CHAR (750)  BASED (PLVEH) ;
80
81  DECLARE 1 TASKDESC    STATIC,      /* TASK DESCRIPTOR FILE */
82          2 TASKDS      CHAR (13),   /* CKF.TASK.DESC */
83          2 TTAB (100)  FIXED BIN,
84
85          1 TASKQVER     BASED (PTO),
86          2 RATING      CHAR (5),
87          2 RAVK         CHAR (2),
88          2 JOBTASK      CHAR (6) ;
89
90  DECLARE 1 TASKDIR (1200) STATIC,      /* JOBTASK FILE DIRECTORY */
91          2 CHTASK      CHAR (13),   /* CKF.TASK.DIR */
92          2 TASKPTR     FIXED BIN,
93          COVTASK (12)  CHAR (1500)  BASED (PTTASK),
94          LOADTASK      CHAR (1500)  BASED (PLTASK) ;
95
96  DECLARE 1 ATASKS      STATIC,      /* ABBR. TASK FILE */
97          2 RATING      CHAR (7),   /* CKF.ATASKS */
98          2 JOBTASK      CHAR (6),
99          2 TASKTTL     CHAR (50),
100         2 FILL         CHAR (6),
101         2 BILCOST      PICTURE '(8)9V99',
102         2 CC80         CHAR (1) ;
103
104  DECLARE 1 AVEHICLES    STATIC,      /* ABBR. VEH FILE */
105          2 STJCKN      CHAR (13),   /* CKF.AVEHS */
106          2 DEVDESIG     CHAR (9),
107          2 DEVNAME      CHAR (47),
108          2 DEVCAST      PICTURE '(8)9V99',
109          2 CC80         CHAR (1),
110
111         VCAST          FIXED DEC (10,2) STATIC,
112         VOVER          CHAR (80)  BASED (PV80) ;
113
114  /*****
115
116  START:  PP = ADDR ( INPARM ) ;
117          PTCIN = ADDR (CINDER) ;
118          PCOV = ADDR (DINDEX) ;
119          PTO = ADDR (TASKDESC) ;
120
121          PV80 = ADDR (AVEHICLES) ;
122          PTVEH = ADDR (VEHDIR) ;
123          PTTASK = ADDR (TASKDIR) ;
124
125          PTRCIN = ADDR ( CIN213 ) ;
126
127          NPAGE, DPAGE, NREC,
128          K = 0 ;
129          LT = 100 ;
130
131  COMMENCE:
132          OPEN FILE (MREF) RECORD INPUT,
133              FILE (DIND) INPJ ;
134
135          READ FILE (MREF) INTO (MAST) ;
136              KMAX = REFS (4) ;
137              MAXD = REFS (2) ;

```

PAGE NUMBER : 3

SOURCE CARD LISTING FOR
P20: /* PRINT ASSIGNED DESIGNATORS - WED/19/JAN/77 */

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```

```

/*****/
/* HERE, COURSE DESCRIPTORS ARE SETUP */
TRYC: IF ( PARM = 'C' ) THEN GO TO TRYV ;
      TYPE = 'COURSE' ;
LP1:  DO J = 1 TO 4 ;
      READ FILE (DIND) INTO (CARD) KEY (J) ;
      COVER (J) = CARD ;
      END LP1 ;

      OPEN FILE (DESC) RECORD INPUT,
      FILE (DCIN) RECORD INPUT ;
      ON ENDFILE (DESC) GO TO EOJ ;

LP2:  DO J = 1 TO 4 ;
      PLGIN = ADDR (COVCIN(J)) ;
      READ FILE (DCIN) INTO (LOADCIN) ;
      END LP2 ;

      GO TO CHECKDEV ;

/* HERE, VEHICLE DESCRIPTORS ARE INITIALIZED */
TRYV: IF ( PARM = 'V' ) THEN GO TO TRYT ;
      TYPE = 'VEHICLE' ;
      MAXD = REFS (8) ;
      PTRCIN = ADDR (VEHDESC) ;

      OPEN FILE (VDESC) RECORD INPUT,
      FILE (VEHS) INPUT,
      FILE (DVEH) RECORD INPUT ;
      ON ENDFILE (VDESC) GO TO EOJ ;

LP3:  DO J = 5 TO 8 ;
      READ FILE (DIND) INTO (CARD) KEY (J) ;
      COVER ( J - 4 ) = CARD ;
      END LP3 ;

LP4:  DO J = 1 TO 4 ;
      PLVEH = ADDR ( COVVEH(J) ) ;
      READ FILE (DVEH) INTO (LOADVEH) ;
      END LP4 ;

      GO TO CHECKDEV ;

/* HERE, SETUP OF TASK DESCRIPTORS */
TRYT: IF ( PARM = 'T' ) THEN GO TO LP5 ;
ER1:  NER = 1 ;
      C1 = PARM ; C4 = PARM2 ;
      PUT STRING (DLINE) DATA ( C1, C4 ) ;
      GO TO BUSTED ;

LP5:  DO J = 9 TO 12 ;
      READ FILE (DIND) INTO (CARD) KEY (J) ;
      COVER ( J - 8 ) = CARD ;
      END LP5 ;

      TYPE = 'JOBTASK' ;
      MAXD = REFS (12) ;
      MAXD2 = MAXD / 2 ;
      PTRCIN = ADDR ( TASKDESC ) ;

      OPEN FILE (TDESC) RECORD INPUT,

```


PAGE NUMBER : 4

SOURCE CARD LISTING FOR
P20: /* PRINT ASSIGNED DESIGNATORS - WED/19/JAN/77 */

```

207         FILE (TASKS) INPUT,
208         FILE (DTASK) RECORD INPUT ;
209     ON ENDFILE (TDESC) GO TO EOJ ;
210
211 LP6:      DO J = 1 TO 12 ;
212           PLTASK = ADDR ( COVTASK(J) ) ;
213           READ FILE (DTASK) INTO (LOADTASK) ;
214           END LP6 ;
215
216     /* HERE, OUTPUT DEVICE ALLOCATION IS CHECKED */
217
218 CHECKDEV:
219     DISP, PTR = 1 ;
220     IF ( PARM2 = 'BOTH' ) THEN GO TO STEP1 ;
221
222     IF ( PARM2 = 'TERM' )
223     THEN PTR = 2 ;
224     ELSE DISP = 2 ;
225
226     /* HERE, PRINTER DATASET INITIALIZED IF REQUIRED */
227
228 STEP1:  IF ( PTR = 2 ) THEN GO TO STEP2 ;
229
230     OPEN FILE (SYSPRINT) STREAM PRINT
231     LINESIZE (120) PAGESIZE (60) ;
232
233     ON ENDPAGE (SYSPRINT)
234     BEGIN ;
235     NPAGE = NPAGE + 1 ;
236     NPGE = NPAGE ;
237     PUT EDIT ( TTL1, ' ' )
238     ( PAGE, LINE(5), X(10), A(42), SKIP(1), A ) ;
239     PUT SKIP (1) ;
240     END ;
241
242     SIGNAL ENDPAGE (SYSPRINT) ;
243
244     /* HERE IS THE DISPLAY ENDPAGE ROUTINE, IF REQUIRED */
245
246 STEP2:  IF ( DISP = 2 ) THEN GO TO DLOOP ;
247
248     ON CONDITION (NEWDP)
249     BEGIN ;
250     LNOW = LT ;
251     IF ( LT < 61 ) THEN LT = 61 ;
252
253     IF ( LT < 66 ) THEN
254 LP7:      DO L = LNOW TO 66 ;
255           DISPLAY ( ' ' ) ;
256           END LP7 ;
257
258           DISPLAY ( ' ' ) ;
259           DPAGE = DPAGE + 1 ;
260           NPGE = DPAGE ;
261           DISPLAY ( TTL1 ) ;
262           DISPLAY ( ' ' ) ;
263           LT = 4 ;
264
265     IF ( PARM = 'C' ) THEN DISPLAY
266     ( 'DESCRIPTORS ASSIGNED TO COURSES' ) ;
267     IF ( PARM = 'V' ) THEN DISPLAY
268     ( 'DESCRIPTORS ASSIGNED TO VEHICLES' ) ;
269     IF ( PARM = 'J' ) THEN DISPLAY
270     ( 'DESCRIPTORS ASSIGNED TO TASKS' ) ;
271     DISPLAY ( ' ' ) ;
272     LT = LT + 2 ;
273
274     END ;
275

```

PAGE NUMBER : 5

SOURCE CARD LISTING FOR
P20: /* PRINT ASSIGNED DESIGNATORS - WED/19/JAN/77 */

```

276 /*****
277
278 /* THIS IS THE PROGRAM MAINLINE */
279
280 DLOOP: IF ( PARM = 'T' ) THEN GO TO TLOOP ;
281        IF ( PARM = 'V' ) THEN GO TO VLOOP ;
282
283 CLOOP: READ FILE (DESC) INTO (CINDESC) ;
284        NREC = NREC + 1 ;
285
286        DLINE = 'CIN : ' || CINDS ;
287
288 LOOKCIN: DO J = 1 TO MAXD ;
289          IF ( CINDS = CHCIN(J) ) THEN GO TO STEP3 ;
290          END LOOKCIN ;
291
292          SUBSTR ( DLINE, 17 ) =
293            '(NO MATCHING NITRAS DATA AVAILABLE)' ;
294
295          GO TO STEP3 ;
296
297 /* FOLLOWING IS THE VEHICLE FIRST LINE SETUP */
298
299 VLOOP: READ FILE (VDESC) INTO (VEHDESC) ;
300        NREC = NREC + 1 ;
301
302        DLINE = VEHDS ;
303
304 LOOKV: DO J = 1 TO MAXD ;
305        K = J ;
306        IF ( VEHDS = CHVEH(J) ) THEN GO TO FINDV ;
307        END LOOKV ;
308
309        SUBSTR ( DLINE, 15 ) =
310          '/ ** NO MATCHING DATA IN VEHICLE FILE **' ;
311        GO TO STEP3 ;
312
313 FINDV: READ FILE (VEHS) INTO (AVEHICLES) KEY (VEHPTR(K)) ;
314        SUBSTR ( DLINE, 15 ) = '/ ' || DEVDESIG
315          || ' / ' || DEVNAME ;
316
317        GO TO STEP3 ;
318
319 /* FOLLOWING IS SETUP OF FIRST LINE FOR TASKS */
320
321 TLOOP: READ FILE (TDESC) INTO (TASKDESC) ;
322        NREC = NREC + 1 ;
323
324        DLINE = TASKOVER.RATING || ' / '
325          || TASKOVER.RANK || ' / '
326          || TASKOVER.JOBTASK ;
327
328        IF ( TASKDS <= CHTASK(MAXD2) )
329          THEN
330            DO J = 1 TO MAXD2 ;
331            K = J ;
332            IF ( TASKDS = CHTASK(J) ) THEN GO TO FINDT ;
333            END ;
334
335          ELSE
336            DO J = MAXD2 TO MAXD ;
337            K = J ;
338            IF ( TASKDS = CHTASK(J) ) THEN GO TO FINDT ;
339            END ;
340
341        SUBSTR ( DLINE, 23 ) =
342          '*** NO MATCHING DATA IN TASK FILE ***' ;
343        GO TO STEP3 ;
344

```

PAGE NUMBER : 6

SOURCE CARD LISTING FOR
P20: /* PRINT ASSIGNED DESIGNATORS - WED/19/JAN/77 */

345 FINDT: READ FILE (TASKS) INTO (ATASKS) KEY (TASKPTR(K)) ;

346 SUBSTR (DLINE, 23) = TASKTTL ;

347 GO TO STEP3 ;

348 /* HERE, FIRST LINE IS OUTPUT */

349 STEP3: LL = 1 ;
350 SRET = STEP4 ;
351 GO TO OUTLOOP ;

352 /* NOW, BACK FROM FIRST LINE OUTPUT */

353 STEP4: ND = 0 ; /* DTAB SS */
354 CFLAG = 0 ; /* CATAGORY PRINT FLAG; 0 MEANS DO IT */
355 NC = 1 ; /* CATEGORIES SS */

356 STEP5: IF (ND >= 100) THEN GO TO DLOOP ;

357 ND = ND + 1 ;
358 IF (DTAB(ND) = 0) THEN GO TO STEP5 ;359 JD = DTAB (ND) ; /* FOUND A NON-0 DESCRIPTOR */
360 KD = PDESC (ND) ; /* PTR TO DESCRIPTOR CARD */

361 IF (KD = JD) THEN GO TO STEP6 ;

362 ER2: NER = 2 ;
363 ER2A: PUT STRING (DLINE) DATA (ND, JD, KD, KMAX) ;
364 GO TO BUSTED ;

365 STEP6: IF (KD <= KMAX) THEN GO TO STEP7 ;

366 ER3: NER = 3 ;
367 GO TO ER2A ;

368 STEP7: IF (ND >= SCAT(NC)) THEN GO TO STEP9 ;

369 STEP8: NC = NC + 1 ;
370 CFLAG = 0 ;
371 IF (NC <= 15) THEN GO TO STEP7 ;
372 ER4: NER = 4 ;
373 GO TO ER2A ;

374 STEP9: IF (ND = SCAT(NC)) THEN GO TO STEP10 ;

375 IF (ND > ECAT(NC)) THEN GO TO STEP8 ;

376 STEP10: IF (CFLAG = 0) THEN GO TO DETOUT ;

377 /* HERE, CATAGORY LINE IS OUTPUT */

378 CATOUT: READ FILE (DIND) INTO (CARD) KEY (PCAT(NC)) ;

379 DLINE = ' ' ;
380 CFILL = CARD ;
381 LL = 2 ;
382 CFLAG = 1 ;
383 SRET = DETOUT ;
384 GO TO OUTLOOP ;

385 /* HERE, DETAIL LINE IS OUTPUT */

386 DETOUT: READ FILE (DIND) INTO (CARD) KEY (KD) ;

387 DLINE = ' ' ;
388 DFILL = CARD ;
389 LL = 3 ;
390 SRET = STEP5 ;
391 GO TO OUTLOOP ;

392 /*****

PAGE NUMBER : 7

SOURCE CARD LISTING FOR
P20: /* PRINT ASSIGNED DESIGNATORS - WED/19/JAN/77 */

```

414      /* THIS IS THE COMBINED DISPLAY / PRINTER OUTPUT ROUTINE */
415
416 OUTLOOP: IF ( DISP = 2 )          /* FIRST, TRY DISPLAY */
417          THEN GO TO TRYPTR ;
418
419 LINE1:  IF ( LL = 1 ) THEN
420          DO ;
421          IF ( LT > 60 )
422              THEN DO ;
423                  SIGNAL CONDITION (NEWDP) ;
424                  END ;
425
426              ELSE DO ;
427                  LT = LT + 3 ;
428                  DISPLAY ( ' ' ) ;
429                  DB1:  DISPLAY ( ' ' ) ;
430                  DB2:  DISPLAY ( ' ' ) ;
431                  END ;
432
433          GO TO DCCOUT ;
434          END LINE1 ;
435
436 LINE2:  IF ( LL = 2 ) THEN
437          DO ;
438          IF ( LT > 61 )
439              THEN DO ;
440                  SIGNAL CONDITION (NEWDP) ;
441                  GO TO DCCOUT ;
442                  END ;
443
444              ELSE DO ;
445                  LT = LT + 2 ;
446                  GO TO DB2 ;
447                  END ;
448          END LINE2 ;
449
450 LINE3:  IF ( LT > 62 ) THEN SIGNAL CONDITION (NEWDP) ;
451          ELSE LT = LT + 1 ;
452
453 DCCOUT: DISPLAY ( DLINE ) ;
454
455 TRYPTR: IF ( PTR = 2 )          /* PRINTER SERVICING ATTEMPTED HERE */
456          THEN GO TO SRET ;      /* OTHERWISE, RETURN TO CALLER */
457
458          IF ( LL < 3 )
459              THEN IF ( LL = 1 ) THEN PUT SKIP (2) ;
460                      ELSE PUT SKIP (1) ;
461
462 PTROUT: PUT EDIT ( DLINE ) ( SKIP(1), A(80) ) ;
463
464          GO TO SRET ;      /* RETURN TO SUBROUTINE CALLER */
465
466 /*****
467
468      /* THIS IS THE ERROR PROCESSOR */
469
470 BUSTED: PUT STRING (CARD) LIST
471          ( ' ** ERROR NUMBER ' || NER || ' HAS OCCURED **' ) ;
472
473 DCCERR: IF ( DISP = 1 ) THEN
474          DO ;
475              DISPLAY ( ' ' ) ;
476              DISPLAY ( ' ' ) ;
477              DISPLAY ( CARD ) ;
478              DISPLAY ( ' ' ) ;
479              DISPLAY ( DLINE ) ;
480              DISPLAY ( ' ' ) ;
481          END DCCERR ;
482

```


PAGE NUMBER : 8

SOURCE CARD LISTING FOR
P20: /* PRINT ASSIGNED DESIGNATORS - WED/19/JAN/77 */

```

483       IF ( PTR = 1 ) THEN
484         PUT EDIT ( CARD, DLINE )
485           ( SKIP (3), A(80), SKIP(2), A(80) ) ;
486
487     /*****/
488
489     /* THIS IS THE ENDFILE PROCESSOR */
490
491     EOJ:   PUT STRING (DLINE) EDIT
492           ( '      ** RECORDS PROCESSED = ', NREC, ' **' )
493           ( A, F(4), A ) ;
494
495       IF ( DISP = 2 ) THEN GO TO STEP11 ;
496
497         DISPLAY ( '      ' ) ;
498         DISPLAY ( DLINE ) ;
499         DISPLAY ( '      ' ) ;
500         DISPLAY ( '      ' ) ;
501
502     STEP11: IF ( PTR = 1 ) THEN
503       PUT EDIT ( DLINE ) ( SKIP(3), A(80) ) ;
504
505       CLOSE FILE (DIND), FILE (MREF),
506       FILE (SYSPRINT) ;
507
508       END P20 ;

```

APPENDIX E

AN INTERACTIVE COMPUTER INTERVIEW

This technique for probability encoding was reproduced from a report titled PROBABILITY ENCODING IN DECISION ANALYSIS* with the permission of one of its authors, Dr. Carl S. Spetzler.

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Appendix B

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B.1 Introduction

This appendix contains a sample session with the PEP program (Probability Encoding Program) developed by the Decision Analysis Group at Stanford Research Institute. This program is an interactive computer interview, which is based on the interval method for encoding. The subject is always given two or three intervals on which to bet and is asked to order the intervals in terms of his preferences. The program relies on an algorithm that finds the indifference point(s) by an iterative procedure. An opportunity always exists for the subject to bypass the iteration if he has decided on the indifference point. The program asks seven sets of questions, and the fractiles corresponding to the probability levels $1/6$, $1/3$, $1/2$, $2/3$, and $5/6$ can be inferred from the answers. In fact, each fractile is encoded twice to provide a consistency check. The distribution is displayed in graphical and tabular form, and the subject is then made aware of any inconsistencies.

B.2 A Sample Session

The easiest way to demonstrate the program is by means of a sample session. The following example required roughly 25 minutes and cost around \$9.00. The instructions part took up some of the time; an experienced user would find the length of the session to be between 10 and 15 minutes. All inputs by the subjects are underlined.

 * WELCOME TO THE DECISION ANALYSIS PROBABILITY ENCODING PROGRAM (PEP) *

PLEASE TYPE YOUR NAME—CARL-AXEL STAEL VON HOLSTEIN

DO YOU NEED INSTRUCTIONS? YES

THIS PROGRAM MEASURES YOUR PERSONAL JUDGEMENT ABOUT AN UNCERTAIN QUANTITY. YOUR JUDGEMENT IS THEN INTERPRETED AS A PROBABILITY DISTRIBUTION. KNOWLEDGE ABOUT PROBABILITY WILL NOT NECESSARILY HELP YOU. THERE ARE ALSO NO RIGHT OR WRONG ANSWERS BECAUSE YOUR JUDGEMENT IS UNIQUE.

SO RELAX AND TRY TO RESPOND WITH YOUR JUDGEMENT.

MOST OF THE QUESTIONS WILL BE IN A FORM WHERE YOU NEED TO MAKE DECISIONS. YOU WILL BE GIVEN EITHER TWO OR THREE NUMBERED RANGES. YOU WILL BE ASKED TO DECIDE WHICH OF THE RANGES ARE THE MOST LIKELY.

ONE WAY TO ANSWER THE QUESTIONS IS TO ASK YOURSELF:
 "WHICH OF THESE RANGES WOULD I PREFER TO BET ON?"

YOU ARE EXPECTED TO ORDER THE RANGES IN TERMS OF YOUR PREFERENCES. FOR EXAMPLE, IF ONLY TWO RANGES ARE GIVEN, YOU SIMPLY TYPE '12' OR '21'. IF YOU ARE GIVEN THREE RANGES AND IF YOU PREFER 3 TO 2 AND 2 TO 1, YOU TYPE '321'. IF YOU THINK 3 AND 2 ARE ABOUT EQUALLY LIKELY BUT PREFER 3 AND 2 TO RANGE 1, TYPE '3=21'.

THE PROGRAM WILL ATTEMPT TO FIND RANGES THAT ARE EQUALLY LIKELY IN YOUR JUDGEMENT. WHEN YOU HAVE REACHED THIS POINT TYPE 'EQ' OR '1=2' OR '1=2=3'.

YOU ARE ALSO ALLOWED A NUMBER OF OTHER RESPONSES.

DO YOU WISH TO SEE THE ENTIRE LIST? YES

| RESPONSES ----- | MEANING ----- |
|--------------------|--|
| 12,21 | YOU ARE COMPARING TWO NUMBERED RANGES. YOU PREFER THE FIRST NUMBERED RANGE TO THE SECOND. |
| 123,321,ETC... | YOU ARE COMPARING THREE NUMBERED RANGES. YOU PREFER THE FIRST NUMBERED RANGE TO THE SECOND AND THE SECOND TO THE THIRD, ETC... |
| 1=23,2=31,ETC... | YOU ARE AGAIN COMPARING THREE NUMBERED RANGES. THE EQUAL SIGN INDICATES EQUALLY LIKELY RANGES. THE RANGES ARE STILL ORDERED BY DESIRABILITY OR PREFERENCE. |
| EQ,EQUAL | IN YOUR JUDGEMENT THE RANGES ARE EQUALLY LIKELY. '1=2=3' AND '1=2' ARE EQUIVALENT TO TYPING 'EQ'. |
| BAC,BACK UP | YOU WISH TO CHANGE A PREVIOUS RESPONSE. YOU MAY BACK UP A MAXIMUM OF FIVE LINES BY REFERENCING A LINE NUMBER. YOU MAY ALSO RETURN TO THE START OF A SECTION OF QUESTIONS BY TYPING THE SECTION LETTER. |

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TER,TERMINATE YOU WANT TO JUMP OVER THE REST OF THE QUESTIONS AND SEE THE OUTPUTS.

SKI,SKIP YOU KNOW WHAT VALUES DIVIDE THE RANGES. THE PROGRAM WILL REQUEST THAT YOU TYPE THEM IN DIRECTLY. SIMPLY TYPE IN YOUR VALUES WHEN THE '?' APPEARS.

DIF,DIFFERENCE THE PROGRAM PRINTS THE DIFFERENCES BETWEEN THE RANGE BOUNDARIES.

SUP,SUPPRESS THE PROGRAM STOPS PRINTING DIFFERENCES.

QUI,QUIT QUIT ENTIRELY. YOU WANT TO JUMP OVER THE REST OF THE QUESTIONS AND THE OUTPUT

WITH THIS INFORMATION, GO AHEAD AND TRY THE PROGRAM. ALL OF YOUR RESPONSES MUST BE TERMINATED BY PRESSING THE RETURN KEY. FEEL FREE TO ASK FOR MORE INFORMATION AT ANY TIME. JUST TYPE THE WORD 'HELP'.

WHAT VARIABLE IS TO BE INVESTIGATED ? PROJECTED SALES

DOES PROJECTED SALES HAVE UPPER AND LOWER LIMITS ? YES

WHAT IS THE UPPER LIMIT ? 500

WHAT IS THE LOWER LIMIT ? 100

[The program sets a limit to infinity if the limit is said not to exist.]

```

-----**A**-----
          RANGE1  RANGE2
LINE#  FROM  TO/FROM  TO
1      100.   300.   500.   12
2      100.   195.   500.   12
3      100.   147.   500.   21
4      100.   170.   500.   21
5      100.   183.   500.   12
6      100.   176.   500.   21
7      100.   180.   500.   20
  
```

[180 is the 1/2 - fractile.]

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-----**R**-----
      RANGE1  RANGE2  RANGE3
LINE# FROM TO/FROM TO/FROM TO
      1    100.    139.    322.    500.    HELP

```

THREE RANGES WERE JUST PRINTED OUT. YOU ARE EXPECTED TO ORDER THESE THREE RANGES IN ACCORDANCE WITH THEIR DESIRABILITY.

FOR EXAMPLE, IF YOU PREFER THE SECOND RANGE TO THE FIRST RANGE AND THE FIRST RANGE TO THE THIRD, YOU SHOULD RESPOND WITH '213'. YOU ARE ALLOWED TO USE AN EQUAL SIGN TO INDICATE EQUALLY LIKELY RANGES, SUCH AS '12=3'. THIS WOULD MEAN YOU CONSIDER THE SECOND AND THIRD RANGES TO BE EQUALLY LIKELY, BUT PREFER THE FIRST RANGE TO BOTH.

```

      RANGE1  RANGE2  RANGE3
LINE# FROM TO/FROM TO/FROM TO
      1    100.    139.    322.    500.    213
      2    100.    139.    248.    500.    213
      3    100.    139.    213.    500.    DIFFERENCES
      3    100. (39.2) 139. (73.8) 213. (287.) 500.    231
      4    100. (59.2) 159. (53.8) 213. (287.) 500.    1=23
      5    100. (49.1) 149. (47.0) 196. (304.) 500.    21=3
      6    100. (54.1) 154. (33.7) 188. (312.) 500.    321
      7    100. (56.6) 157. (35.3) 192. (309.) 500.    EQ

```

[157 and 192 are the 1/3- and 2/3-fractiles, respectively.]

```

-----**C**-----
      RANGE1  RANGE2
LINE# FROM TO/FROM TO
      1    100. (28.3) 128. (28.3) 157.    SUPPRESS
      1    100.    128.    157.    12
      2    100.    114.    157.    21
      3    100.    121.    157.    21
      4    100.    125.    157.    1=2

```

[125 is the 1/6-fractile since it divides an interval with probability 1/3 into two equally likely intervals.]

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-----**D**-----
      RANGE1  RANGE2
LINE# FROM  TO/FROM  TO
  1   192.   346.   500.   BACK
WHERE TO ?   C
  
```

[The subject realized that his indifference point should be 127 for the range in Set C.]

```

-----**C**-----
      RANGE1  RANGE2
LINE# FROM  TO/FROM  TO
  1   100.   128.   157.   SKIP
  1   100. ?   127
  1   100.   127.   157.   EQ
  
```

```

-----**D**-----
      RANGE1  RANGE2
LINE# FROM  TO/FROM  TO
  1   192.   346.   500.   12
  2   192.   265.   500.   SKI
  2   192. ?   230
  2   192.   230.   500.   EQ
  
```

THIS ENDS THE FIRST QUESTION SET, A SHORTER SET FOLLOWS--PLEASE CONTINUE.

[230 is the 5/6 fractile. The first four sets of questions have established one value for each of the five fractiles. The next three sets are used for a consistency check. The subject can terminate the interview at this point (and anywhere else, too) and go directly to the outputs.]

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-----**E**-----

| LINE# | RANGE1 FROM | RANGE2 TO/FROM | RANGE3 TO/FROM | TO | |
|------------|----------------|-------------------|-------------------|------|--------------|
| 1 | 100. | 121. | 161. | 180. | <u>213</u> |
| 2 | 100. | 121. | 151. | 180. | <u>BACK</u> |
| WHERE TO ? | | <u>1</u> | | | |
| 1 | 100. | 121. | 161. | 180. | <u>231</u> |
| 2 | 100. | 131. | 161. | 180. | <u>231</u> |
| 3 | 100. | 137. | 161. | 180. | <u>12=3</u> |
| 4 | 100. | 134. | 151. | 180. | <u>31=2</u> |
| 5 | 100. | 135. | 156. | 180. | <u>1=2=3</u> |

[The whole range was assigned probability 1/2 in Set A. 135 and 156 are therefore the 1/6- and 1/3-fractiles.]

-----**F**-----

| LINE# | RANGE1 FROM | RANGE2 TO/FROM | TO | |
|-------|----------------|-------------------|------|-----------|
| 1 | 157. | 174. | 192. | <u>21</u> |
| 2 | 157. | 183. | 192. | <u>12</u> |
| 3 | 157. | 179. | 192. | <u>EQ</u> |

[179 is a new value for the median (the 1/2-fractile) since the limits of the range corresponded to the probability levels 1/3 and 2/3 in Set B.]

DON'T GIVE UP--THIS IS THE LAST ONE

-----**G**-----

| LINE# | RANGE1 FROM | RANGE2 TO/FROM | RANGE3 TO/FROM | TO | |
|--------|----------------|-------------------|-------------------|------------|------------|
| 1 | 180. | 195. | 341. | 500. | <u>SKI</u> |
| 1 | 180. | ? | <u>Q210</u> | | |
| WHAT ? | | | | | |
| 210 | | | | | |
| 1 | 180. | 210. | ? | <u>290</u> | |
| 1 | 180. | 210. | 290. | 500. | <u>EQ</u> |

[210 and 290 are new values for the 2/3- and 5/6-fractiles.]

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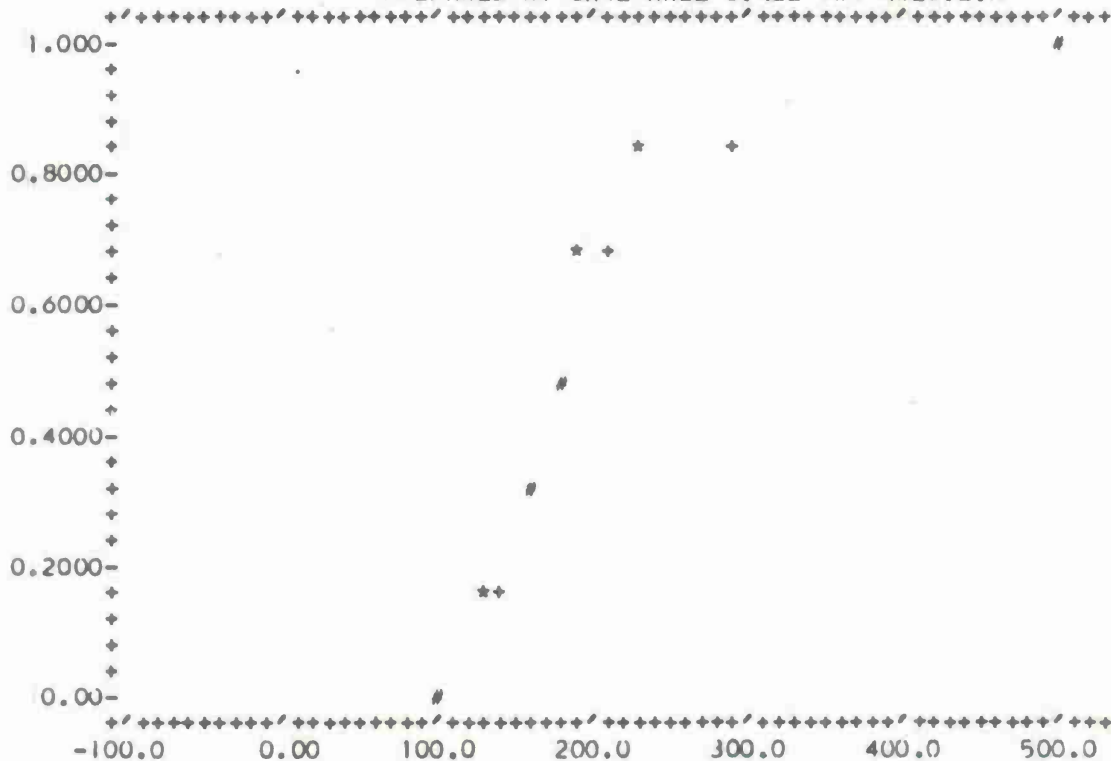
PLEASE ROLL THE PAPER FORWARD AND HIT CARRIAGE RETURN

 * PEP : OUTPUT *

VARIABLE NAME:PROJECTED SALES

DATE 11/16/72

PREPARED BY CARL-AXEL STAEL VON HOLSTEIN



CUMULATIVE PROBABILITY TABLE

| PROBABILITY | THAT X IS LESS THAN | |
|-------------|---------------------|--------|
| | (****) | (****) |
| 1.00 | 500. | 500. |
| .833 | 230. | 290. |
| .667 | 192. | 210. |
| .500 | 180. | 179. |
| .333 | 157. | 156. |
| .167 | 127. | 135. |
| .000 | 100. | 100. |

[The subject can now see some inconsistencies, especially at the high end. The 5/6-fractile was first inferred to be 230 from Sed D and later to be 290 from Set F. The subject now has to reconcile the inconsistencies, but that is done outside of the program.]

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APPENDIX F
BIBLIOGRAPHY

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